# THE RUBBER AGE AND TIRE NEWS

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Hevea Rubber Interplanted with Tea

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# Here Are Accurate Figures on the Cost of Shipping Tires in Crates

***Read Them Carefully—NOW—if You Have the Time. If Not, Please Send This Article Immediately to Your Purchasing Agent and to the Head of Your Shipping Department, to be Returned to You for Reading After They Have Finished With It***

To Automobile Tire Manufacturers,
Everywhere.

*Gentlemen:—*

It's a matter of real pride to us, as the country's leading makers of Tire Crates, to render a thorough-going service to every customer we have.

Now, that means more than merely making good Crates; it includes making prompt shipments, and selling at a fair price.

True, we count on making a just profit—but we contend that Crates sold on that basis are the cheapest for the customer in the end, because we keep informed on the whole tire-shipping situation all the time, and are thus able to furnish valuable particulars on tire transportation.

As this situation is constantly changing, we are able to secure much data that it is to the customer's advantage to know. All this is, of course, aside from the superior character of Steele-Alderfer Crates and is entirely free to all our customers.

But we *do* object—vigorously—to misrepresentations! One such has recently come to our attention, through a circular issued by a tire manufacturer, setting forth the advantages of having tires shipped uncrated. His figures are so far out of the way that we cannot let them pass without correction.

So we are quoting from his circular these alleged prices of crate parts, and opposite each item we have set the figures at which Steele-Alderfer Crate Parts may be bought today:

| | Price Named in Circular | Steele-Alderfer Co.'s Regular Price |
|---|---|---|
| Two Crate Heads | $0.80 | $0.40 |
| Two Fibreboard Circles for Heads | .80 | .30 |
| Fibreboard Sheet for Lining | .50 | .30 |
| 8 Wooden Slats (We furnish 10, however) | .24 | .18 |
| Strap Iron and Labor (This item allowed, though no straps are needed with Steele-Alderfer Crates) | .10 | .10 |
| Total | $2.44 | $1.28 |

From the above, our friend concludes that he has arrived at a packing cost of $0.488 per tire. But listen—

## Steele-Alderfer Crates Cost Less Than This—Yet They Hold More Tires

This manufacturer does not say what size crates he has in mind, nor does he give the size tires going into it.

However, our figures in the above table are for a Crate large enough to carry **eight** 37 x 5 tires, or **fifteen** 34 x 4's.

The cost per tire would thus run down to 16c for the large size, or less than 8½c for the smaller; certainly a low enough rate of insurance to pay for getting your product safely and economically to destination.

A Steele-Alderfer Crate small enough to carry only 5 tires—the number he figures on—would cost only $1.10, with a carrying cost not of 48c but of 22c per tire. Some difference!

## Experience Shows Tire Crates an Investment, Not an Expense

The one big argument back of tire crates is the fact that they save money for tire-makers right through the whole range of manufacturing and selling—in packing, storing and shipping.

It is only because they have proved themselves such a splendid, efficient investment that tire-manufacturers great and small, all over the country, have come so generally to using them in recent years, in place of other forms of packing.

Once your men get used to crates (and it won't take them long to do that) they will find their work going along much faster.

In shipping, there is no comparison between crates and other methods, because of the complete protection afforded the tires in the strong cylindrical package, and because tires in crates take the lowest classification in the tariff.

In storage, crated tires are fully protected against injury, both from rough handling and from contact with oil or other harmful substance on the floor.

## Steele-Alderfer Serves America's Largest Rubber Companies

For years we have been making a definite bid for the business of the largest Tire Companies in the United States.

Today, practically every one of them is an active customer, and a warm friend and "booster" for Steele-Alderfer Crates.

The reason is that, before we went after the big business, we organized to carry it—financially and physically—with

## A Well-Financed Company; a Big, New Plant; Plenty of Raw Material

Briefly, these are some of the things we have to offer you:

A financial standing second to none in the trade.

A big, new, modern plant, equipped with machines that cut out much hand work and reduce production costs wonderfully.

An almost unlimited supply of material to draw upon—ample stocks here in the yards, more in the woods already cut, and scores of acres still standing—with Steele-Alderfer mills and Steele-Alderfer motor trucks and teams to haul it to the plant or to the nearest railroad.

## We Are Ready to Serve You in a Really Big Way—NOW

Yes, right now in these rushing times, we are producing and delivering, on schedule, orders for thousands of Tire Crates and for carloads of our various other shipping containers—Hose Cores, Hose Reels, Carriage Tire Reels, and so on.

We carry abundant stocks, and we'll work overtime if necessary to ship when we promise.

Don't you think it would be a fine thing for both of us if we were to get acquainted?

We do, too; so why not drop us a few lines about the shipping conditions at your plant, right away?

*Sincerely yours,*

## THE STEELE-ALDERFER CO., Cuyahoga Falls, Ohio NEAR AKRON

*Makers of Automobile Tire Crates, Hose Cores, Hose Reels, Carriage Tire Reels, and Other Shipping Containers for Rubber Goods. "If We Haven't a Package Suited to Shipping Your Product, We'll Make One for You."*

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*Largest Reclaimers in the World*

(FOUR FACTORIES)

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# Indexed Buyers' Guide to Rubber Products

*Below will be found a list of Rubber Products and the index to the Rubber Companies who manufacture each item, compiled from information furnished by the manufacturers. The key symbols after the names of the articles refer to the names of manufacturers that appear in the Alphabetical List of Rubber Manufacturers that follows this BUYERS' GUIDE. Further information for Buyers will be gladly furnished by The Rubber Age and Tire News*

## Mechanical Rubber Goods

**Aircraft Equipment,** D40.
**Anti-Rattlers,** B42, B72, C54, C64, E32, F20, F22, G50, I12, M42, N28, U4, U10, C6, D38, G22.
**Arch Supporters,** F22, L30, C6, G22.
**Bags, Air,** A40.
**Bags, Gas,** D6, F36, I12, M42, M52, M66, P20, Q4, U10, C6, D38, G22, A38.
**Bags, Gas Main,** D6, M52, M66, P20, Q4, U10, C6, G22.
**Bags, Hat,** B42, C64, E26, M50, N28, P20, R20, U4, U10, C6, G22.
**Balata, Specialties,** B42, D22, R18, S68, U10, C6.
**Balls, Closet,** M50, M52, S50, S68, U10, C6, W26, G22, C18.
**Balls, Faucet,** U10, C18.
**Balls, Fuller,** B26, C40, C54, E22, E26, I12, M42, M50, M52, P20, R18, S50, S68, T6, U10, V22, C6, D38, W26, G22, C18, A38.
**Balls, Gas Main,** D6, M52, U10, C6, G22.
**Balls, Tank,** C40, M50, M52, S68, U10, C6, G22, C18, A38.
**Balls, Trap,** B42, M52, U10, C6, G22.
**Balls, Valve,** B42, C40, I12, M50, M52, R18, S68, U10, C6, D38, W10, G22, C18.
**Bands, Carpet Sweeper,** B42, B72, C32, C40, C64, D36, E26, E32, G50, M42, N28, P20, Q4, R18, S50, T6, U10, C6, D38, W10, G22, C18, A38.
**Band, Tread,** T3.
**Bands, Hose,** U10.
**Bands, Umbrella,** D6, S50, U10, C6, D38, G22.
**Belting, Balata,** B42, B72, D22, M24, R18, S68, U4, U10, V6, C6.
**Belting, Band Saw Bands,** B42, B72, C40, C54, E26, G50, M50, N28, P20, Q4, R18, R20, U4, U10, V12, C6, D38, W10, G22.
**Belting, Canvas,** B50, D22, M24, M50, N52, R20, S68, U4, U10, V6, C6, D38.
**Belting Conveyor,** B42, B50, B72, C40, C54, D22, E26, G30, G50, H8, M24, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V6, V12, V42, C6, D38, G22, C18.
**Belting, Elevator,** B42, B50, B72, C40, C54, D22, E26, G30, G50, H8, M24, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V6, V12, W42, C6, D38, G22.
**Belting, Endless,** B42, B50, C40, C54, D22, E26, G30, G50, M24, M50, M52, N28, T20, Q4, R18, R20, S68, U4, U10, V6, V12, W42, C6, D38, G22.
**Belting, Flange Conveyor,** B42, N28, R18, R20, S68, U4, U10, W42, C6, D38, G22.
**Belting, Friction Surface,** B42, B50, C40, C54, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.
**Belting, Gold Dredger,** B42, B50, E26, G30, H8, P20, Q4, R18, R20, U4, U10, V6, V12, C6, D38, G22.
**Belting, Grader,** B42, B50, B72, C40, D22, E26, G30, G50, H8, M50, M52, N28, Q4, R18, R20, T6, U4, U10, V6, V12, C6, D38, G22.
**Belting, Grain Elevator,** B42, B50, B72, C40, C54, E26, G30, G50, H8, M50, M52, N28, P20, Q4 R18, R20, S68, U4, U10, V6, V12, W42, C6, D38, G22.
**Belting, Laggings,** B72, C54, E26, G30, G50, M52, Q4, R18, R20, U4, U10, C6, D38, G22.
**Belting, Oil Well,** B42, B50, B72, C40, C54, D22, E26, G30, G50, H8, M52, N28, P20, Q4, R18, R20, T6, U4, U10, V6, V12, C6, D38, G22.
**Belting, Polishing,** B42, C40, C54, E26, G30, G50, M50, M52, Q4, R18, R20, S68, U4, U10, C6, D38, G22.
**Belting, Pulley Covering,** B42, B50, B72, C54, E26, G30, G50, M50, M52, Q4, R18, R20, T6, U4, U10, V12, C6, D38, G22, A38.
**Belting, Splicing,** B42, C40, D22, E26, G30, G50, R18, R20, U4, U10, C6, G22.
**Belting, Stitched,** B42, B50, C40, C54, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.
**Belting, Transmission,** A24, B42, B50, B72, C40, C54, D22, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V6, V12, W42, C6, D38, G22.
**Belting, Vanner,** B42, N28, R18, R20, U4, U10, V6, C6, D38, G22.
**Belts,** B42, B50, B72, C40, C54, D22, E26, G10, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V6, V12, W42, C6, D38, G22.
**Belts, Polishing,** B42, C40, C54, E26, G10, G50, M50, M52, Q4, R20, S68, U4, U10, C6, D38, G22.
**Bindings, Rubber Carpet,** U10.
**Blades, Squilgee,** C18.
**Blankets,** B42, B50, B72, G50, M52, R20, S68, U10, C6, D38, G22.
**Blankets, Printers',** B42, G50, K12, M52, R20, S68, U10, C6, D38, G22, A38.
**Blocks,** B42, B72, C40, C54, C64, F22, G50, H8, M50, M52, R18, R20, S50, U4, U10, C6, D38, W26, G22.
**Blocks, Hat,** U10.
**Bolsters,** A58, B42, C54, G50, R18, R20, U10, C6, D38, G22.
**Brewers' and Bottlers' Supplies,** B72, C40, C54, C64, E22, E26, F20, G50, M50, M52, N6, R18, R20, S50, S68, T6, U4, U10, W42, C6, D38, W10, G22, C18, A38.
**Brushes, Rubber,** M42, S50, U10, C6, G22, C18.
**Buckets, Pump,** B72, C64, M50, M52, R18, S50, U10, C6, G22, C18.
**Bulb Sets,** D2, D6
**Bulbs, Horn,** U10.
**Buffers,** C40, C54, C64, E22, E26, G30, G50, N6, R18, S50, S68, U4, U10, C6, D38, G22, A38.
**Bumpers,** A58, B42, B72, C32, C40, C54, C64, E22, E26, E32, F20, F22, G30, G50, H8, I12, M42, M50, M52, M66, N28, Q2, Q4, R18, R20, S50, S68, T6, U4, U10, V12, V22, C6, D38, P52, W26, W10, G22, C18, A38, D40.
**Bumpers, Bar,** C54, C64, F20, G50, H8, I12, M42, M50, M52, T6, U4, U10, C6, D38, G22, C18.
**Bumpers, Car Seat,** C54, C64, F20, G30, G50, H8, I12, M50, M52, N28, Q4, R20, S50, S68, T6, U4, U10, V12, C6, D38, W26, G22, C18.
**Bumpers, Door,** B72, C40, C54, C64, F20, F22, G30, G50, H8, M42, M50, M52, Q4, R18, S50, S68, U4, U10, C6, D38, W26, G22, C18, A38.
**Bumpers, Furniture,** C40, C64, F20, M50, M52, N28, Q4, R18, R50, U4, U10, C6, D38, G22, C18.
**Bumpers, Screw,** C64, F20, I12, M50, M52, P4, U4, U10, C6, D38, G22, C18.
**Bumpers, Tank,** C40, F20, M50, M52, Q4, U4, U10, C6, D38, G22, C18.
**Bumpers, Wagon,** A58, B42, C40, C54, C64, D36, E32, F20, F22, G50, M50, M52, N28, Q6, R18, S50, T6, U4, U10, V12, C6, D38, G22, A38.
**Bushings,** A76, B72, C40, C64, E22, E26, F20, H8, M42, M50, M52, R18, S50, S68, T6, U4, U10, V12, C6, G22, C18, A34.
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**Cloths, Card,** B66, U10, C6, G22.
**Cloth, Tobacco,** B50.
**Collets,** M52, U10, C6, G22, C18.
**Connections, Hose,** B50, C40, C54, C64, E26, E32, F20, G30, M50, M52, T6, U4, U10, C6, D38, M82, W10, G22, C18, A38.
**Cord, Rubber,** B42, B50, B72, C40, C54, C64, D6, E26, F20, G30, G50, H8, M50, M52, N28, R18, R20, S50, U4, U10, V12, C6, D38, W26, G22.
**Cores, Hose,** U10.
**Couplings, Hose,** U10, A24, M82.
**Coverings, Gin Roll,** U10.
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**Cushions, Billiard,** B42, B50, B68, C54, G30, R20, S50, U4, U10, C6, D38, G22.
**Cushions, Bradley Hammer,** U10
**Cushions, Heel,** F32, L30, G22.
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**Discs, Valve,** B24, B42, C40, C54, E22, E26, F20, F22, G30, G50, M50, M52, P20, Q4, R18, S50, S68, U4, U10, V12, C6, D38, W10, G22, C18.
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**Eyes, Bleachery,** B42, U10.
**Faucet Attachments,** M42, M52, C6, G22, C18.
**Feet, Typewriter,** C45, C64, E32, G50, H8, I12, M42, M52, R18, R50, S50, U10, V12, V22, C6, D38, W26, G22, C18, A38.
**Filling, Pulley or Sheave,** C54, H8, M50, M52, N28, Q4, R18, T6, U10, C6, D38, G22.
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**Fittings, Hydraulic,** C40, T6, U10, C6, M82, G22, A38.
**Flange, Closet Floor,** C54, E32, G50, M50, M52, Q4, T6, U10, C6, D38, G22, C18.
**Furnace Sets,** D6, F32, M50, M52, Q4, S50, U10, C6.
**Gaskets, Air Hose,** B42, C40, C54, E22, F20, G30, G50, H8, M50, M52, P20, Q4, R18, R20, S50, S68, T6, U4, U10, C6, D38, P52, W26, W10, G22, C18, A38.
**Gaskets, Basin,** B42, C54, E22, F20, G50, I12, M50, M52, Q2, Q4, S68, T6, U4, U10, C6, D38, G22, C18, A38.
**Gaskets, Screen,** U10.
**Gaskets, Sink,** B42, C54, E22, F20, G50, I12, M42, M50, M52, Q4, S68, T6, U4, U10, C6, D38, G22, C18, A38.
**Gaskets, Unvulcanized,** P38.
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**Gum, Hat,** U6.
**Gum, Rubber,** S37.
**Gum, Stamp,** B42, C64, F20, G50, H60, M42, M50, M66, S50, T14, U4, U10, C6, D38, G22.
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**Hose Accessories,** B50, C40, C64, E26, G50, M50, N28, R20, T6, U10, C6, D38, M82, G22.
**Hose, Acid Tubing,** B42, B50, C40, C54, C64, D6, E20, E26, G30, G50, H8, M50, M52, M66, N28, P20, Q4, R18, R20, S50, S68, T6, U4, U10, V12, W42, C6, D38, W10, G22.
**Hose, Agricultural,** B42, B50, C40, C54, C64, E20, E26, G30, G50, M50, M52, N28, Q4, R18, R20, S68, T6, U4, U10, W42, C6, D38, G22, D40.
**Hose, Air,** U10.
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**Hose, Air Drill,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, M82, G22.
**Hose, Aeroduct Vacuum,** B42, B50, C40, E20, E26, G50, H8, M50, P20, Q4, R20, S68, T6, U4, U10, C6, G22.
**Hose, Armored,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.
**Hose, Ash Pit,** B42, B50, C40, C54, E20, E26, G50, H8, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.
**Hose, Automobile Radiator,** B42, B50, C32, C40, C54, C64, E20, E26, E32, F20, G30, G50, H8, I12, M42, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22, A38.
**Hose, Beer Tubing,** B42, B50, C40, C54, C64, D6, E20, E26, G30, G50, H8, M50, M52, M66, N28, P20, Q4, R18, R20, S68, T6, T16, U4, U10, V12, W42, C6, D38, G22, C18.
**Hose, Boiler Test,** B42, B50, C40, C54, C64, E20, E26, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.
**Hose, Boiler Washout,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.
**Hose, Braided Chemical,** B42, B50, E20, E26, H8, M50, M52, N28, P20, Q4, R18, R20, S68, U4, U10, W42, C6, D38, G22.
**Hose, Braided Pneumatic,** B42, B50, C40, E20, E26, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, W42, C6, D38, G22.
**Hose, Brewers',** B42, B50, C40, C54, C64, D6, E20, E26, G30, G50, H8, M50, M52, M66, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.
**Hose, Cement Gun,** B42, B50, C64, E20, G50, M50, N28, P20, R20, S68, U4, U10, V12, C6, D38, G22.
**Hose, Chemical Engine,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.
**Hose, Cloth Inserted Tubing,** B42, B50, C40, C54, C64, D40, E20, E26, E32, F22, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.
**Hose, Coal Sprinkler,** B42, B50, C40, C54, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, T6, U4, U10, V12, W42, C6, D38, M82, G22.
**Hose, Coal Sprinkler, Woven Steel Armored,** W42.

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## Mechanical Rubber Goods—*Continued*

**Hose, Coke,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Compressed Air,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Conducting,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose Connections,** A24, B42, B50, B52, C40, C64, E26, G50, M50, N28, Q4, R18, R20, S68, T6, U4, U10, C6, D38, M82, G22, A38.

**Hose, Cotton,** B50, C54, E26, G50, H8, M50, N28, Q4, R18, R20, S68, U4, U10, V12, W42, C6, D38, G22.

**Hose Coverings,** B42, B50, C40, E20, E26, G50, M50, N28, Q4, R18, R20, S68, U4, U10, V12, C6, D38, M82, G22.

**Hose, Deck,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Dredging Sleeves,** B42, B50, C40, C54, C64, E26, G30, G50, H8, M50, N28, P20, Q4, R18, R20, T6, U4, U10, V12, C6, D38, G22.

**Hose, Dynamo Steam,** B42, B50, C40, C54, E20, E26, H8, M50, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Factory Fire,** B42, B50, C40, C54, E26, G30, G50, H8, M50, N28, Q4, R18, R20, S68, U4, U10, V12, W42, C6, D38, G22.

**Hose, Fire,** B42, B50, C40, C54, E20, E26, G30, G50, H8, N28, Q4, R18, R20, S68, U4, U10, V12, W42, C6, D38, G22.

**Hose, Fire, Cotton, Rubber Lined,** B42, B50, C40, C54, E26, G30, G50, H8, N28, Q4, R18, R20, U4, U10, V12, W42, C6, D38, G22.

**Hose, Fire Engine Suction,** B42, B50, C40, C54, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Fire Extinguisher Tubing,** B42, B50, C40, C54, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose Fittings,** A24, B42, B50, C40, E26, G50, H8, N28, R20, U10, V12, C6, D38, M82, G22.

**Hose, Flue Cleaning,** B42, B50, C40, C64, E20, E26, G30, G50, H8, M50, N28, P20, Q4, R18, R20, S68, T6, U4, U10, C6, D38, M82, G22.

**Hose, Garden,** B42, B50, C40, C54, C64, D40, E20, E26, G30, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Gas,** B42, B50, C40, C54, C64, E20, E26, F22, G30, G50, H8, M50, M52, P20, Q4, R18, R20, T6, U4, U10, W42, C6, D38, M82, G22.

**Hose, Gasoline,** B42, B50, C40, C54, C64, D40, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Gas Tubing,** B42, B50, C40, C54, C64, E20, E26, F20, G30, G50, H8, M50, M52, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22, C18, A38.

**Hose, Hard Rubber Suction,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Hot Water,** B42, B50, C40, C54, C64, D40, E20, E26, G30, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Hydraulic,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Lathe Turret,** M52.

**Hose, Lawn,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Linen,** B50.

**Hose, Mill and Factory,** B42, B50, C40, C54, E20, E26, G30, G50, H8, N28, C6, D38, G22.

**Hose, Molded,** B42, B50, C40, C54, E20, E26, G30, G50, H8, J10, M50, N28, P20, Q4, R18, R20, U4, U10, W42, C6, D38, G22.

**Hose, Oil,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Oil Suction,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Paint,** B42, B50, C40, C54, C64, E20, E26, G50, H8, M50, P20, R18, R20, T6, U4, U10, V12, C6, M82, G22.

**Hose, Phosphate Suction,** B42, B50, C40, C54, E20, E26, G50, H8, M50, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Pneumatic,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Radiator Steam,** U10.

**Hose, Rubber,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, J10, M50, M52, M66, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, V42, C6, D38 M82, G22.

**Hose, Sand Blast,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42 C6, D38, G22.

**Hose, Sand Suction,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Smooth Bore Suction,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42 C6, D38, G22.

**Hose, Soda,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Spray,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, M82, G22.

**Hose, Steam,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Steam Drill,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Steam Woven Steel Armored,** W42.

**Hose, Street Washing,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Submarine,** B42, B50, C40, E20, E26, G50, H8, M50, N28, P20, Q4, R18, R20, S68, U4, U10, C6, G22.

**Hose Suction,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Tanner,** B42, B50, C40, C54, E20, E26, G50, H8, M50, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Tender or Tank,** B42, B50, C40, C54, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, U12, V12, W42, C6, D38, M82 G22.

**Hose, Turbine Cleaner,** B42, B50, C40, C54, E20, E26, G50, H8, M50, P20, Q4, R18, R20, S68, T6, U4, U10, W42, C6, D38, G22.

**Hose, Underwriters,** B42, B50, C40, E20, E26, G30, G50, N28, Q4, R18, R20, S68, U4, U10, W42, C6, D38, G22.

**Hose, Vacuum,** B42, B50, C40, E20, E26, G30, G50, H8, M50, M52, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Hose, Vinegar,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Voice Tubing,** B42, B50, C54, E20, E26, G50, H8, M52, Q4, R18, R20, S68, U4, U10, V12, C6, D38, M82, G22.

**Hose, Water,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Hose, Water, Woven Steel Armored,** W42.

**Hose, Wine,** B42, B50, C40, C54, C64, E20, E26, G50, H8, M50, M52, M66, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22.

**Hose, Wire Bound,** B42, B50, C40, C54, C64, E20, E26, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, M82, G22.

**Keys, Typewriter,** U10, C6.

**Lagging,** B72, C54, C64, G50, R18, T6, U4, U10, C6, G22, B72.

**Linings, Brake,** E26, E32, G50, H8, J10, Q4, T6, U4, U10, C6, G22.

**Linings, Hose,** U10.

**Linings, Inner,** D38.

**Linings, Robe,** B50.

**Matiees,** B42, C54, C64, D6, E22, F20, G50, H8, M42, M50, M52, P20, Q4, R18, R20, S50, T6, U4 U10, V12, C6, P52, G22, A38.

**Matting, Corrugated,** B42, B50, B68, C40, C54, E26, E32, F20, F36, G30, G50, H8, M50, M52, N28, P20, Q2, Q4, R18, R20, S68, U4, U10, V12, W42 C6, D38, S54, G22, A38.

**Matting, Bath Tub,** B42, B50, C54, E26, F20, G50, H8, M50, M52, N28, P20, Q4, S68, T6, U4, U10, C6, D38, G22.

**Matting, Cuspidor,** B42, B50, C40, C54, E26, E32, F20, G50, M50, M52, N28, P20, Q2, Q4, R18, S68, U4, U10, V12, V22, W42, C6, D38, G22, A38.

**Matting, Door,** B42, B50, C40, C54, E26, E32, F20, F36, G50, H8, M50, M52, N28, P20, Q2, Q4, R18, R20, S68, U4, U10, V12, W42, C6, D38, G22, A38.

**Matting, Elevator,** B42, B50, C40, C54, E26, F20, F36, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Matting, Floor,** B42, B50, C40, C54, E26, F20, F36, G30, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, U4, U10, V12, W42, C6, D38, G22.

**Matting, Knob,** B42, B50, C40, C54, F20, G50, H8, M50, M52, N28, P20, Q4, R18, R20, S68, U4, U10, W42, C6, D38, G22.

**Matting, Perforated,** B42, B50, C40, C54, E26, E32, F20, F36, G30, G50, H8, M50, M52, N28, B20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, G22, A38.

**Matting, Pneumatic,** B42, E32, H8, P20, R18, U4, U10, C6, G22.

**Matting, Pyramid,** B42, B50, C54, E26, F20, H8, M50, M52, N28, P20, Q2, Q4, R18, R20, S68, U4, U10, C6, D38, G22.

**Matting, Stair,** B42, B50, C40, C54, E26, F20, G30, G50, H8, M50, M52, N28, P20, Q2, Q4, R18, R20, S68, U4, U10, V12, C6, D38, G22, A38.

**Mechanical Rubber Goods,** B42, B50, B72, C14, C40, C54, C64, E22, E26, E32, F20, G30, G50, H8, I12, M50, M52, M66, N6, N28, P20, Q4, R18, R20, R42, S50, S68, T6, U4, U10, V12, V22, W42, C6, D38, W26, G22, C18, A38.

**Molded Goods in Customers' Molds,** B24, R50, C18.

**Molded Mechanical Goods,** B72, T16, U10, C18.

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**Nuts, Lock,** U10, C6.

**Oil Well Supplies,** U10.

**Packers,** B72, C40, C54, C64, E22, E26, H8, M50, N28, P20, R18, S50, S68, U4, U10, V12, C6, W10, G22, C18.

**Packing,** B26, B42, B50, B72, C14, C32, C40, C54, C64, E22, E26, E32, G30, G38, G50, H8, M50, M52, N88, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, P52, W10, G22, C18.

**Packing, Boiler Gaskets,** B26, B42, B72, C14, C40, C54, C64, E22, E32, G30, G38, G50, J10, M50, M52, N28, T20, Q4, R20, S50, S68, U4, U10, V12, C6, D38, W10, G22.

**Packing, Coil,** B26, B42, C14, C40, C54, E22, E26, G38, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, W10, G22.

**Packing, Gaskets,** B26, B42, B72, C14, C40, C54, E22, G30, G38, G50, J10, M50, M52, N28, P20, Q4, R18, R20, S68, U4, U10, V12, W42, C6, D38, W10, G22, C18, A38.

**Packing, Oil Well,** B26, B42, B72, C14, C40, C54, C64, E22, E26, G30, G38, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S50, S68, T6, U4, U10, V12, C6, D38, W10, G22.

**Packing, Radiator Discs,** B42, C14, C40, C54, E22, E32, G50, M52, P20, Q4, R20, S50, S68, T6, U4, U10, C6, G22.

**Packing, Ring,** B26, B42, C14, C40, C54, E22, E26, G38, G50, H8, J10, M50, M52, P20, Q4, R20, S68, T6, U4, U10, W42, C6, D38, G22.

**Packing Sets,** B26, B42, C14, C40, E22, G38, G50, H8, J10, M52, P20, Q4, R20, S68, U4, U10, W42, C6, G22.

**Packing, Sheet,** B26, B42, B50, B72, C14, C40, C54, C64, E22, E26, E32, G38, G50, H8, J10, M50, M52, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Packing, Spiral,** B26, B42, C14, C40, C54, E26, G30, G38, G50, H8, J10, M50, M52, N28, P20, Q4, R18, R20, S68, T6, U4, U10, V12, W42, C6, D38, G22.

**Pads, Horseshoe,** C32, C64, E32, F20, M50, M52, N28, R18, R20, U10, C6, D38, P52, W10, G22, C18.

**Pads, Landing,** U10, C18.

**Pails,** U10.

**Pipes, Hose,** U10.

**Pipes, Play,** B50, G50, H8, N28, P20, R20, U10, C6, D38, G22.

**Platens, Typewriter,** B42, G50, N28, R18, S50, U10, V12, C6, G22.

**Plugs, Tapered,** C54, E22, G50, M52, R18, U10, V12, C6, G22, C18.

**Plumbers' Specialties,** C40, E22, G50, I12, M50, M52, Q4, S50, S68, U10, V22, C6, D38, W26, W10, G22, C18.

**Pulleys, Rubber Faced,** R42.

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**Rings,** A58, B42, B72, C40, C54, C64, E22, E26, F20, G30, G50, I12, M42, M50, M52, N28, R18, R20, S68, T6, U4, U10, V12, D38, P52, W26, G22, C18, C40, S68.

**Rings, Asbestos,** U10.

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**Rings, Beer Keg Washer,** B42, B72, C40, C54, C64, E22, E26, F20, G50, H8, M50, M52, N28, R18, R20, S50, S68, T6, U4, U10, C6, C18.
**Rings, Brewers,** U10.
**Rings, Cloth Inserted,** B42, C40, C54, E22, F20, G50, H8, M50, M52, N28, P20, R18, R20, S68, U4, U10, V12, C6, D38, G22.
**Rings, Combination Hydraulic,** U10.
**Rings, Coupling Packing,** U10.
**Rings, Cream Separator,** B42, C40, C54, E26, F20, G50, H8, I12, M50, M52, N28, P20, R18, R20, S50, S68, T6, U4, U10, V12, C6, D38, G22.
**Rings, Duster,** S50, S68, U4, U10, V12, C6, G22.
**Rings, Fruit Jar,** B50, C80, E26, G50, H8, M50, M52, P38, R18, S68, U4, U10, C6, D38, G22, C18.
**Rings, Gage Glass,** U10, C18.
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**Rings, Packing,** S68.
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**Rings, Plunger,** B42, C40, G38, H8, I12, J10, M50, M52, Q4, R20, S50, S68, T6, U4, U10, C6, G22, C18.
**Rings, Rainbow,** U10.
**Rings, Round Flange,** B42, C40 C54, E22, F20, G50, H8, J10, M50, M52, Q4, R18, R20, S68, T6, U4, U10, C6, D38, G22, C18.
**Rings, Square Flange,** B42, B72, C40, E22, F20, G50, H8, J10, M50, M52, Q4, R18, R20, S68, T6, U4, U10, V12, C6, D38, G22, C18.
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# Alphabetical List of Rubber Manufacturers

**THE RUBBER AGE AND TIRE NEWS will furnish information and addresses of all companies listed below. Names of advertisers in this issue are printed in heavy face type.**

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A 4—A. A. Wire Co., Inc.
A 5—Achilles Rubber Co.
A 6—Acme Rubber Mfg. Co.
A 8—Acorn Insulated Wire Co.
A 10—Advance Rubber Co.
A 12—Aetna Rubber Co.
A 13—Aiken-Lambert Co.
A 14—Ajax Rubber Co., Inc.
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A 18—Akron Tire Co., Inc.
A 20—Alden Rubber Co.
A 22—Allcock Mfg. Co.
A 24—Allen, W. D., Mfg. Co.
A 26—Alliance Rubber Co.
A 28—Amazon Rubber Co.
A 30—American Asbestos Co.
A 32—American Electrical Works.
A 34—American Hard Rubber Co.
A 36—American Lead Pencil Co.
A 38—American Para Rubber Co.
A 40—American Rubber & Tire Co.
A 42—American Rubber Co.
A 44—American Rubber Fabric Co.
A 46—American Rubber Mfg. Co.
A 48—American Rubber Mfg. Co. of N. J.
A 50—American Steam Packing Co.
A 52—American Steel & Wire Co.
A 54—American Tire Co.
A 56—American Tire Co.
A 58—American Wringer Co.
A 60—Anchor Packing Co.
A 62—Anderson, L. M., Co.
A 64—Anderson Rubber Works.
A 65—Apsley Rubber Co.
A 66—Archer Rubber Co.
A 68—Armstrong Rubber Co., Inc.
A 70—Asbestos Fibre Spinning Co.
A 72—Asbestos & Rubber Works of America.
A 74—Asbestos & Rubber Works of New Jersey.
A 76—Asbestos Textile Co., Inc.
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A 82—Astoria Wire Co.
A 83—Athol Mfg. Co.
A 84—Atlantic Insulated Wire & Cable Co.
A 86—Atlantic Mfg. Co.
A 88—Atlantic Rubber Co.
A 90—Atlas Auto Supply Co.
A 92—Augustine, W. B.
A 94—Avon Sole Co.

B 4—Baltimore Rubber Tire Mfg. Co., Inc.
B 6—Banigan Rubber Co.
B 8—Batavia Rubber Co.
B 10—Bauer & Black.
B 12—Baumann Rubber Co.
B 14—Bay State Insulated Wire & Cable Co.
B 16—Beacon Rubber Mfg. Co.
B 18—Beacon Falls Rubber Shoe Co.
B 20—Behrend & Rothschild.
B 22—Belden Mfg. Co.
B 24—Bell, Andrew, Estate of.
B 26—Belmont Packing & Rubber Co.
B 28—Berlin Rubber Mfg. Co.
B 30—BeSaw Tire & Rubber Co.
B 32—Bergougnan Tire Corp.
B 34—Bishop Gutta Percha Co.
B 36—Blake, Whitney Co.
B 38—Blakesley Novelty Co.
B 39—Boone Tire & Rubber Co.
B 40—Boonton Rubber Mfg. Co.
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B 44—Boston Blacking Co.
B 46—Boston Insulated Wire & Cable Co.
B 48—Boston Rubber Shoe Co.
B 50—Boston Woven Hose and Rubber Co
B 52—Bourn Rubber Co.
B 54—Bowers Rubber Works.
B 56—Bowling Green Rubber Co.
B 58—Braender Rubber & Tire Co.
B 60—Braintree Rubber Cement Co.
B 73—Brietson Mfg. Co.
B 62—British-American Mfg. Co.
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B 66—Brooklyn Shield & Rubber Co.
B 68—Brunswick - Balke - Collender Co.
B 70—Bucyrus Rubber Co.
B 72—Buffalo Weaving & Belting Co.

C 2—C. C. C. Fire Hose Co.
C 3—Cambridge Rubber Co.
C 4—Canada Wire & Cable Co., Ltd.
C 6—Canadian Consolidated Rubber Co., Ltd.
C 8—Canadian General Electric Co., Ltd.
C 10—Canadian Rubber Company of Montreal, Ltd.
C 12—Canadian Top Co., Ltd.
C 14—Cancos Mfg. Co.
C 16—Candee, L., & Co.

*C 18—Canfield, H. O., Co. See Advertisement on Page 159.*

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C 22—Canton Rubber Co.
C 24—Carborundum Co.
C 25—Carlisle Cord Tire Co.
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C 28—Carr, F. S., Co.
C 30—Centaur Rubber & Tire Co., Inc.
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C 44—Clifton Mfg. Co.
C 46—Collyer Insulated Wire Co.
C 48—Colorado Tire & Leather Co.
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C 52—Columbus Rubber Co. of Montreal, Ltd.
C 54—Combination Rubber Mfg. Co.
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C 58—Conklin Pen Mfg. Co.
C 60—Conquerer Rubber Cement Co.
C 62—Consolidated Hoof Pad Co.
C 64—Continental Rubber Works.
C 66—Converse Rubber Shoe Co.
C 68—Cortland Tire & Rubber Co.
C 70—Craig Dental Mfg. Co.
C 72—Crandall Packing Co.
C 74—Crescent Insulated Wire & Cable Co.
C 75—Crown Tire and Rubber Co.
C 76—Cummer-Dowswell, Ltd.
C 78—Cummings, G. R., & Co.
C 80—Cuppies Co.
C 82—Cutten & Foster.

D 2—Davidson Rubber Co.
D 4—Davis-Fry Mfg. Co.
D 6—Davol Rubber Co.
D 8—Day, H. P. & E., Inc.
D 10—Dayton Rubber Mfg. Co.
D 12—Dealers Steam Packing Co.
D 14—Deane Plaster Co.
D 16—Delion Tire & Rubber Co.
D 18—De Silva Rubber Co., Inc.
D 20—Detroit Insulated Wire Co.
D 22—Dick, R. & J., Ltd.
D 24—Dixon, Joseph, Crucible Co.
D 26—Doherty, Eugene, Rubber Works, Inc.
D 28—Dominion Rubber Co., Ltd.
D 30—Dominion Tire Co., Ltd.
D 32—Dreadnaught Tire & Rubber Co.
D 34—Dry Climate Tire Mfg. Co.
D 36—Dryden Rubber Co.
D 38—Dunlop Tire & Rubber Goods Co., Ltd.
D 40—Dural Rubber Corp.

E 2—Eagle Pencil Co.
E 4—Eagle Rubber Co.
E 6—Eagle Rubber Cement Co.
E 8—Eastern Electric Cable Co.
E 10—Eastern Rubber Co.
E 12—Easthampton Rubber Thread Co.
E 14—East Palestine Rubber Co.
E 16—Eclipse Cement & Blacking Co.
E 18—Ehman Tire & Rubber Co.
E 19—Electric Cable Co.
E 20—Electric Hose & Rubber Co.
E 22—Elkhart Rubber Works.
E 24—Ellis Cement Co.
E 26—Empire Rubber & Tire Co.
E 28—Endura Mfg. Co.
E 30—Eudurance Tire & Rubber Co.

*E 32—Essex Rubber Co., Inc. See Advertisement on Page 131.*

E 34—Eureka Cement Co.
E 36—Eureka Fire Hose Mfg. Co.
E 38—Eureka Packing Co.
E 40—Eureka Rubber Mfg. Co.
E 42—Excello Raincoat Co.

F 2—Faber, A. W.
F 4—Faber, Eberhard, Rubber Co.
F 6—Fabric Fire Hose Co.
F 8—Fairfield Rubber Co.
F 10—Falls Rubber Co.
F 12—Falls Novelty Co.
F 14—Faultless Rubber Co.
F 16—Featheredge Rubber Co.

# Alphabetical List of Rubber Manufacturers—Continued

F 18—Federal Asbestos Co.
F 20—Federal Rubber Co.
F 22—Firestone Tire & Rubber Co.
F 24—Fisk, Ltd.
F 26—Fisk Rubber Co. of New York.
F 28—Flexible Rubber Goods Co.
F 30—Ford Motor Co.
F 32—Foster Rubber Co.
F 34—Franche, C. E. Co.
F 36—Franklin Rubber Co.

G 2—G. & J. Tire Co.
G 4—Garlock Packing Co.
G 6—General Asbestos & Rubber Co.
G 8—General Electric Co.
G 10—General Tire & Rubber Co.
G 12—Giant Tire & Rubber Co.
G 14—Gibney Tire & Rubber Co.
G 16—Gillette Rubber Co.
G 18—Globe Rubber Co.
G 20—Globe Rubber Tire Mfg. Co.
G 22—Goodrich Rubber Co., The B. F.
G 24—Goodyear Rubber Co.
G 26—Goodyear Rubber Insulating Co.
G 28—Goodyear Tire & Rubber Co.
G 30—Goodyear Tire & Rubber Co. of Canada, Ltd.
G 32—Goodyear's India Rubber Glove Mfg. Co.
G 33—Goodyear's India Rubber Selling Co.
G 34—Goodyear's Metallic Rubber Shoe Co.
G 36—Gordon Tire & Rubber Co.
G 38—Gould Packing Co.
G 40—Granby Rubber Co., Ltd.
G 42—Great Eastern Rubber Co.
G 44—Greensburg Tire & Rubber Co.
G 46—Gregory Rubber Co.
G 48—Gryphon Tire & Rubber Co.
G 50—Gutta Percha & Rubber, Ltd.
G 52—Gutta Percha & Rubber Mfg. Co.

H 2—Habirshaw Electric Cable Co.
H 4—Hainsburg, N. H. & Co.
H 6—Hale, Alfred Rubber Co.
H 7—Halifax Rubber Co.
H 8—Hamilton Rubber Mfg. Co.
H 10—Hanover Rubber Co.
H 12—Hardman Tire & Rubber Co.
H 14—Hartford Rubber Works Co.
H 16—Hardright Co.
H 20—Hatch, Henry C.
H 22—Hauthaway & Sons, Inc.
H 24—Hawkeye Tire and Rubber Co.
H 26—Hazard Mfg. Co.
H 28—Hazen-Brown Co.
H 30—Heath, Edmund F. & Son.
H 32—Hendler, Jesse.
H 34—Hendrie, W. C. Rubber Co.
H 36—Hewitt Rubber Co.
H 40—Hodgman Rubber Co.
H 42—Hollingshead, R. M.
H 44—Holmes Packing & Supply Co.
H 46—Home Rubber Co.
H 48—Hood Rubber Co.
H 50—Hood Tire Co.
H 52—Hosmer, G. A. Co.
H 54—Howe - Baumann Balloon Co.
H 56—Howe Rubber Co.
H 58—Huntington Tire & Rubber Co.
H 60—Hygienic Rubber Works.

I 2—Ideal Rubber Co.
I 4—Imperial Belting Co.
I 6—Independent Rubber Co., Ltd.
I 8—India Rubber Co.
I 10—Indian Rubber Mfg. Co., Inc.
I 12—Indiana Rubber & Insulated Wire Co.
I 14—International Rubber Co.
I 16—International India Rubber Corp.
I 18—Invincible Tire Co.
J 2—Jackson-Eno Rubber Co.
J 4—Jenkins Rubber Co.
J 6—Johnson, Henry Co.
J 8—Johnson & Johnson.
J 10—Johns-Manville, H. W. Co.
J 12—Johns-Pratt Co.
K 2—Kansas City Rubber & Tire Co.
K 3—Kanzee Tire Co., Ltd.
K 4—Kaufman Rubber Co., Ltd.
K 6—Keasbey & Mattison Co.
K 8—Keaton Tire & Rubber Co.
K 10—Kelly-Springfield Tire Co.
K 11—Kendall Tire & Rubber Co.
K 12—Kenyon, C. Co.
K 14—Kerite Insulated Wire & Cable Co.
K 16—Keystone Rubber Mfg. Co., Inc.
K 18—Killion Rubber Co.
K 20—King Rubber Co.
K 22—Kleinert, I. B. Rubber Co.
K 24—Knight Tire & Rubber Co.
K 26—Kokomo Rubber Co.
K 28—Korber Rubber Mfg. Co.

L 2—L. & M. Rubber Co.
L 4—La Crosse Rubber Mills Co.
L 6—La Favorite Rubber Mfg. Co.
L 8—Lambertville Rubber Co.
L 9—Longwear Rubber Co.
L 10—Lancaster Tire & Rubber Co.
L 12—Laurel Company.
L 14—Lee Tire & Rubber Co.
L 16—Lion Tire & Rubber Corp.
L 18—Lincoln Rubber Co.
L 19—Longwear Rubber Co.
L 20—Lovell Mfg. Co.
L 22—Lowell Insulated Wire Co
L 24—Lubron Co.
L 26—Luzerene Rubber Co.
L 28—Lycoming Rubber Co.
L 30—Lynn Rubber Mfg. Co

M 2—McClurg Rubber Co.
M 4—McCormick, E. J. Rubber Co.
M 6—McCreary Tire & Rubber Co.
M 8—McCue & Pierce.
M 10—McGraw Tire & Rubber Co.
M 12—McIlroy Belting & Hose Co.
M 14—McLean Tire & Rubber Co.
M 16—McNaull Tire Co.
M 18—McTernen Rubber Mfg. Co.
M 20—Maguire Rubber Co.
M 22—Manhattan Rubber Mfg. Co.
M 24—Manheim Mfg. & Belting Co.
M 26—Mansfield Tire & Rubber Co.
M 28—Maple Leaf Rubber Co.
M 30—Marathon Tire & Rubber Co.
M 32—Marathon Tire & Rubber Co., Ltd.
M 34—Marion Insulated Wire & Rubber Co.
M 36—Marion Tire & Rubber Co.
M 38—Mason Tire & Rubber Co.
M 40—Massillon Rubber Co.
M 42—Mattson Rubber Co.
M 44—Mayflower Rubber Works Co.
M 46—Meade Rubber Co.
M 48—Mechanical Fabric Co.
M 50—Mechanical Rubber Co. (Chicago).
M 52—Mechanical Rubber Co. (Cleveland).
M 54—Mercer Rubber Co.
M 56—Merchants' Rubber Co.
M 58—Metal Hose & Tubing Co.
M 62—Meyer Rubber Co.
M 64—Michelin Tire Co.
M 65—Midland Tire & Rubber Co.
M 66—Miller Rubber Co.
M 68—Miner Rubber Co., Ltd.
M 70—Minzensheimer, Dr. Her.
M 72—Mishawaka Woolen Mfg. Co.
M 74—Mohawk Rubber Co.
M 76—Montgomery Bros., Inc.
M 76—Moore, Alfred F.
M 80—Morgan & Wright.
M 82—Mulconroy Company, Inc.
M 84—Mutty, L. J. Co.
M 86—Mutual Tire & Rubber Co.
M 88—Mystic Rubber Corp.

N 2—Narragansett Rubber Co.
N 4—National Aseptic Laboratories.
N 6—National Co.
N 8—National India Rubber Co
N 10—National Rubber & Specialties Co.
N 12—National Rubber Co.
N 14—National Rubber Mfg. Co.
N 16—National Tire & Rubber Co.
N 18—Needham Tire & Rubber Co.
N 20—Newark Rubber Co.
N 22—New Brunswick Rubber Co.
N 24—New Castle Rubber Co.
N 26—New England Cable Co.
N 28—New Jersey Car Spring & Rubber Co.
N 30—New Jersey Rubber Supply Co.
N 32—New York Belting & Packing Co.
N 34—New York Insulated Wire Co.
N 36—New York Mackintosh Co.
N 38—New York Rubber Co.
N 40—New York Shield Co.
N 42—Northern Electric Co., Ltd.
N 44—Northland Rubber Co., Inc.
N 46—Norwalk Tire & Rubber Co.

O 1—Oak Rubber Co.
O 2—O. K. Tire Co.
O 4—Okonite Co.
O 6—Olden Rubber Mfg. Co.
O 7—Old Town Rubber Co.
O 8—Oliver Rubber Mfg. Co.
O 12—Omo Mfg. Co.
O 13—O'Neil Tire and Rubber Co.
O 14—Oriental Rubber Co.

P 2—Packard Electric Co.
P 4—Panther Rubber Mfg. Co.
P 6—Parker Pen Co.
P 8—Parker, Stearns & Co.
P 10—Partridge, F. E. Rubber Co.
P 12—Pearce-Arrow Tire & Rubber Co.
P 14—Pearce Tire & Rubber Co.
P 16—Peerless Cement Co.
P 18—Peerless Insulated Wire & Cable Co.
P 20—Peerless Rubber Mfg. Co.
P 22—Peerless Tire & Rubber Co.
P 24—Pennsylvania Rubber Co.
P 26—Perfection Tire & Rubber Co.
P 28—Perfection Tube Co.
P 30—Peters Mfg. Co.
P 32—Pharis Tire & Rubber Co.
P 34—Phillips, Eugene F., Electrical Works, Ltd.
P 36—Phillips Insulated Wire Co.
P 38—Phoenix Hermetic Co.
P 40—Pike Rubber Co.
P 42—Pines Rubber Co., Inc.
P 44—Plymouth Rubber Co.
P 46—Polack Tyre & Rubber Co.
P 48—Portage Rubber Co.
P 50—Porter Rubber Co.
P 52—Portland Rubber Mills
P 54—Prenzel, A. H., Rubber Co.
P 56—Progress Rubber Co.
P 58—Progressive Rubber Co.
P 60—Puget Sound Rubber Co.

Q 2—Quabaug Rubber Co.
Q 4—Quaker City Rubber Co.
Q 6—Quality Tire & Rubber Co.
Q 8—Quinn, K. J., & Co.

R 2—Racine Auto Tire Co.
R 4—Racine Rubber Co.
R 6—Rainbow Rubber Co.
R 8—Raley Rubber Co.
R 10—Raymond & Co.
R 12—Reach, A. J., Co.
R 14—Reading Rubber Mfg. Co.
R 16—Reality Rubber Co.
R 18—Republic Rubber Co.
R 20—Revere Rubber Co.
R 22—Roberts Rubber Co., Weldon.
R 24—Roebling's, John A., Sons Co.
R 26—Rome Wire Co.
R 28—Rosenthal & Katz.
R 30—Rosenwald & Weil.
R 32—Royal Equipment Co.
R 34—Royal Rubber Cement Co.
R 36—Royal Rubber Works.
R 38—Rubber & Celluloid Harness Trimming Co.
R 40—Rubber Goods Mfg. Co.
R 42—Rubber Insulated Metals Corp.
R 44—Rubber Products Co.
R 46—Rubberset Co.
R 48—Rubber Step Mfg. Co.
R 50—Rubber Stopple Co.
R 52—Ryan Ideal Stain Blacking Co.

S 2—Safety Insulated Wire & Cable Co.
S 4—Salem Rubber Cement Co.
S 6—Salem Rubber Co.
S 7—Samson Tire & Rubber Co.
S 8—Savage Tire Corp.
S 10—Savoie Rubber Co.
S 12—Schacht Rubber Mfg. Co.
S 14—Schavoir Rubber Co.
S 16—Schaw Cone Tire Co.
S 18—Schein, S., & Sons.
S 20—Schmid-Lyon Rubber Co.
S 22—Schwarzwaelder Co.
S 23—Sciato Rubber Co.
S 24—Seabury & Johnson.
S 26—Seamless Rubber Co.
S 28—Semple Rubber Co.
S 30—Simplex Wire & Cable Co.
S 32—Smith Canvas Tread Tire Co.
S 34—Soltau, Robert, Co.
S 36—Southern Tire & Rubber Co.
S 37—Savoie Rubber Co.
S 38—Spalding, A. G., & Bros.
S 40—St. Louis Rubber Cement Co.
S 42—St. Mungo Mfg. Co. of America
S 44—Standard Four Tire Co.
S 46—Standard Rubber & Cable Co.
S 48—Standard Tire & Rubber Co.
S 50—Standard Tire & Rubber Mfg. Co.
S 52—Standard Underground Cable Co.
S 54—Standard Woven Fabric Co.
S 56—Star Rubber Co.
S 58—Steece, Mortimer.
S 60—Sterling Rubber Co., Ltd.
S 61—Sterling Tire Corp.
S 62—Stokes, Joseph, Rubber Co.
S 64—Stoughton Rubber Co.
S 66—Stowe & Woodward Co.
S 68—Strong Rubber & Asbestos Mfg. Co.
S 70—Sun Novelty Co.
S 72—Sunset Rubber & Supply Co.
S 74—Sussex Rubber Co.
S 76—Swinehart Tire & Rubber Co.

T 2—Taunton Rubber Co.
T 4—Ten Broeck Tyre Co., Inc.
T 6—Thermoid Rubber Co.
T 8—Tilton Rubber Mfg. Co.
T 10—Toronto Rubber Co., Ltd.
T 12—Transparent Rubber Co.
T 14—Traun Rubber Co.
T 16—Tyer Rubber Co.

U 2—U-Glu Supply Corp.
U 4—United & Globe Rubber Mfg. Co.
U 6—United Shoe Machinery Co.
U 8—United States Asbestos Co.

*U 10—United States Rubber Co. See Advertisement on Page 123.*

U 12—United States Tire Co

V 2—Vail Rubber Co.
V 4—Van Cleef Bros.
V 6—Victor Balata & Textile Belting Co.
V 8—Victor Rubber Co.
V 10—Viscol Company.

*V 12—Voorhees Rubber Mfg. Co. See Advertisement on Page 155.*

V 14—Vulcalose Co.
V 16—Vulcan Asbestos Mfg. Co., Inc.
V 18—Vulcan Proofing Co.
V 20—Vulcan Rubber Co.
V 22—Vulcanized Products Co.
V 24—Vulcanized Rubber Co.

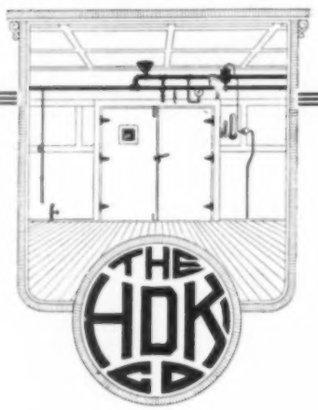
W 2—Waitt Cement Co.
W 4—Wales Goodyear Rubber Shoe Co.
W 6—Washburn & Moen Mfg. Co.
W 8—Waterman, L. E., Co.
W10—West American Rubber Co.
W12—Western Electric Co., Inc.
W14—Western Reserve Rubber Co.
W16—Western Rubber Co.
W18—Westinghouse Electric & Mfg. Co.
W20—Whitall-Tatum Co.
W22—White, S. S., Dental Mfg. Co.
W24—Whitehead Bros. Rubber Co.
W26—Williams-Bowman Rubber Co.
W28—Wilson Tire & Rubber Co.
W30—Wire & Cable Co.
W32—Wohlberg, Richard.
W34—Woodward, F. E., & Sons
W36—Woodworth Mfg. Co.
W38—Woonsocket Rubber Co.
W40—Worthington Ball Co.
W42—Woven Steel Hose & Rubber Co.

X 2—Xenia Rubber Mfg. Co.

Y 2—Yatman Rubber Co.

Z 2—Zee Zee Rubber Co.

DRYING FROM THE INSIDE-OUT
WITH MOIST AIR




# Nothing Newer Under the Sun!

Ask any visitor to the recent National Exposition of Chemical Industries, held in New York, what was the most advanced method of drying demonstrated there and you will find that—

The Hunter Patent Process of drying with moist air antiquated every other method.

So simple, economical, adaptable, thorough and uniform, it combines the advantages of every other drying process.

And besides—it offers something absolutely new to insure positive improvement in your stock whether you are washing rubber or not.

## It Dries From the INSIDE-OUT

Without the use of fans, blowers or other complicated machinery and with uniform dependability under all conditions of humidity, circulation and temperature.

One can dry crude rubber together with compounds in their original packings—at the same time in the same kiln.

If you are using rubber and have not investigated the Hunter Patent Process, it is your duty to do so at once.

These manufacturers have investigated it and have installed the Hunter Patent Process within the last few months:

Ajax Rubber Co. (Trenton)
Beacon Falls Rubber Shoe Co.
Boone Tire & Rubber Co.
Canadian Consolidated Rubber Co.
Dayton Rubber Manufacturing Co.
Dominion Tire Co.
Ehman Tire & Rubber Co.
Essex Rubber Co.
Federal Rubber Co.
Fisk Rubber Co.
Gordon Tire & Rubber Co.
Gutta Percha & Rubber, Ltd.
Hood Rubber Co.
I. B. Kleinert Rubber Co.
J. & D. Tire & Rubber Co.
Kelly-Springfield Tire Co.
Kokomo Rubber Co.
La Crosse Rubber Mills Co.
Marathon Tire & Rubber Co.
Pennsylvania Rubber Co.
Racine Rubber Co.
Seamless Rubber Co.
The Batavia Rubber Co.
Top Notch Co., Inc.
United States Rubber Co.

*Put the Hunter Process to the test by sending without obligation to our laboratory samples of your stock to be processed and returned for your inspection.*

**Hunter Dry Kiln Company**
**26th and Cornell, Indianapolis, Ind.**

## The Seamless Rubber Company

*INCORPORATED*

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*Manufacturers of*

## Druggists' Rubber Sundries

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*the original two year guaranteed line*

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Main Offices and Factory, New Haven, Conn.

*Inquiries solicited and given prompt attention*

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THAT HAS STOOD THE TEST FOR YEARS

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BOOT *and* SHOE
MECHANICAL—AUTO TIRE
PROOFING
HARD RUBBER

*We will cheerfully furnish samples upon request*

**Somerset Rubber Reclaiming Works**

NEW BRUNSWICK, N. J.

Factory—East Millstone, N. J., Somerset County

# THE RUBBER AGE AND TIRE NEWS

NOVEMBER 10, 1917 VOL. II. NO. 4

Member of the Associated Business Papers, Inc.


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THE
RUBBER AGE
AND TIRE NEWS

# Vulcanizing and Braiding Rubber Insulated Wires

The vulcanizing of rubber insulated wires and cables is carried out in specially built vulcanizers, which are usually of the cylindrical, horizontal type. The drums bearing the rubber covered wire are placed on a small car, which, when loaded, is run into the vulcanizer. Some manufacturers wrap the outer layer of wires with muslin to protect it from direct contact with the vulcanizing steam; others do not go to this trouble. The average internal diameter of the vulcanizers used for curing wire insulations is about five feet.

When the carriage load of wire has been pushed into the vulcanizer, the latter is closed and steam is let into it. The vulcanizers are covered with a thick heat insulation as are also the steam pipes leading into them. The object of these insulations is to reduce the condensation of steam to a minimum. Steam traps are usually provided to insure the introduction of dry steam and keep moisture from the rubber. As the steam pressure in the boiler is always higher than the pressure required for vulcanizing wire coverings, the steam inlet pipe is always provided with a pressure regulator.

When the vulcanizer has been tightly closed, the steam inlet valve is opened gradually and carefully, while the steam outlet valve is left open until nothing but dry steam escapes through it. Then it is closed and pressure increases in the vulcanizer.

Wire and cable insulations require only a soft cure under a steam pressure of 40 to 45 lbs. The time required for this cure varies with the composition of the compound and the proportion of sulphur it contains.

Braiding Department for Small Wires

Generally speaking, wires and cables should be vulcanized as rapidly as possible. A rapid cure is particularly desirable with heavily compounded stock. The temperature of the vulcanizing chamber may be raised as rapidly as possible without injurious effect upon the rubber insulations. From twenty to thirty minutes should be sufficient to reach the vulcanizing temperature, which should be held for about thirty minutes, except in the case of heavy covers, which often require an hour of vulcanizing temperature to properly cure them. The average wire "heat" requires from one hour to an hour and a half. In this connection, it should be remarked that over-vulcanization is more to be feared than under-vulcanization.

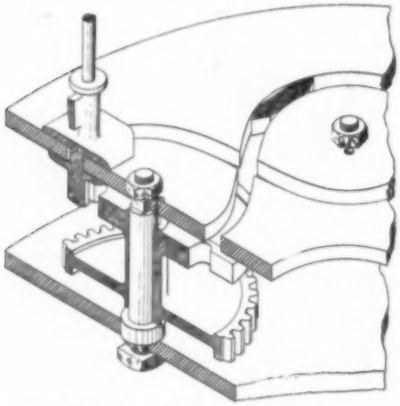
All compounds used for insulating should be made to require the same cure so that various kinds of wire may be cured simultaneously in the same vulcanizer. Of course it is never possible to handle compounds so as to be able to cure small house wiring in the same heat with heavy cables.

Certain insulating compounds become very soft when heated for vulcanization. Manufacturers using these compounds have specially designed vulcanizers provided with means for revolving the drums of wire continuously during vulcanization. The rotation of the drums prevents the insulation from being pressed flat when they become plastic under the influence of the vulcanizing heat.

### *Open Steam Considered Best*

Good results in curing rubber insulated wires are most easily obtained in open steam vulcanizers. Dry heat is more difficult to handle

and takes more time. Even with long cures, it is practically impossible with dry heat to obtain uniformity of temperature throughout a vulcanizing chamber. The outside layers of insulated wire, which are more directly exposed to the heat waves coming from the walls of the vulcanizer, start to vulcanize much sooner than the inner layers and are consequently over-cured before the latter are vulcanized.



Cross Section of Plates and Horn Gear

Some manufacturers, however, have obtained good results with the dry heat process by arranging steam coils to run through the middle of the wire-bearing drums when they are in position in the vulcanizer. Others have obtained fairly good results with dry heat by using artificial means for circulating the heated air in the sealed vulcanizer.

Smooth-walled dry heat vulcanizers of the ordinary type cannot be made to cure wire insulations within any practicable space of time. Dry heat vulcanizers for curing wire insulations must have flanged inner walls to give a larger heat radiating surface. Better still are dry heat vulcanizers provided with a complete lining of steam coils as well as double walls. The dry heat process necessitates the use of special compounds containing as large a percentage of litharge as possible.

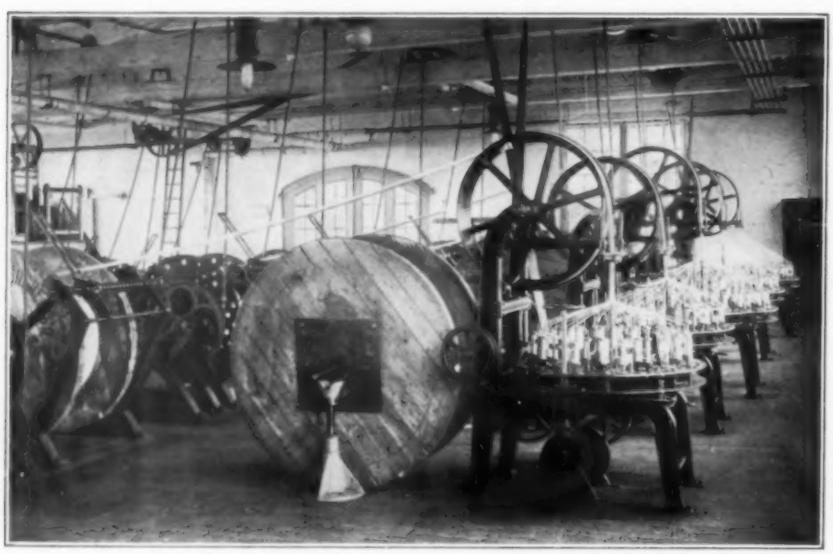
Wooden drums should never be used for holding wire while it is being vulcanized, for the wood absorbs the moisture from the first steam entering the vulcanizer and then gives it off gradually during the heat. It is essential to have positively dry steam during the actual vulcanization and the moisture coming out of the wood would make this impossible.

When suitable vulcanization has been effected, the steam inlet is closed and the steam outlet opened. Then the vulcanizer must be opened as rapidly as possible before condensation can set in and dampen the surface of the insulations.

### *Applying Braided Covering*

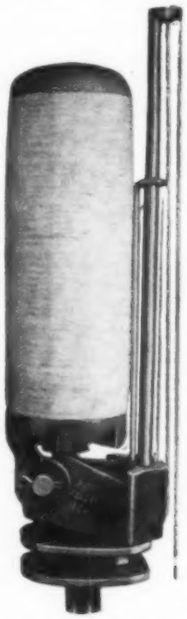
The rubber cover of most insulated wires is protected by a textile braid, which completely encloses it. Some manufacturers apply this braid before vulcanizing the rubber cover; others apply it after the rubber has been cured.

All braiding machines used for this purpose are built practically on the same principle, differing from one another in details of their construction, in size, in numbers of bobbin carriers, and in the sizes of bobbins they can accommodate. There are single, double and triple braiders, bearing one, two and three decks of bobbin carriers. In multiple deck braiders, the top decks always have four more carriers than the decks immediately below them. Multiple deck braiders make two or three braidings at a time.



A Cable Braiding Department

The smallest braiders used in insulating work have at least twelve bobbin carriers. Larger ones can accommodate from sixteen to ninety-six bobbins.



Bottom-Latch Carrier

Small machines are usually arranged in one or two rows on driving benches, so that they can be driven from a common shaft. These driving benches save considerable floor space and can be provided with a slow motion shaft for driving take-up reels and a traverse guide for laying the wire evenly on the wind-up reels.

### *Durability Important*

Braiding machines are subject to much wear and tear. For this reason durability and simplicity of operation are sought in their construction. These machines consist essentially of a rigid frame, which holds plates provided with " runs " or " runways," in which bobbin carriers travel in opposite directions, crossing each other's paths at regular intervals. The plates are made of rolled steel, there being a top and a bottom plate for each deck in the braiding machine, and are connected by means of turned steel stay bolts with large shoulders.

The raceways consist of grooves cut into the top plate. These grooves are milled and accurately ground to size. The carriers, traveling in the raceways, follow the pitch line of a series of horn gears which are arranged between the top and bottom plates. These horn gears have cut teeth and comparatively long bearings provided with suitable bushings and means for positive and generous lubrication.

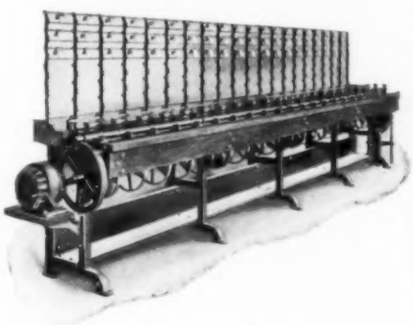
Braiding machines are usually belt driven. The belt-pully at the side

of the machine drives a shaft, which transmits the power to the horn gears of all the decks and to the other driven parts of the machine. A clutch is provided for the starting and the stopping of the machine. This clutch is operated by means of a hand lever at the front. Stop motions are provided for stopping the machine automatically when an end of yarn breaks or a bobbin becomes empty. Speed variations are obtained by change gears, which give a positive, rigid drive at all times.

*Carriers*

The carriers which travel in the "runs" and carry the bobbins of yarn are made in a great variety of styles. They probably are the most important part of the machine, for the speed and efficiency of the whole machine depends upon their design.

The patented bottom latch carrier, shown in the accompanying illustration, is used on braiders made by the Textile Machine Works, Reading,



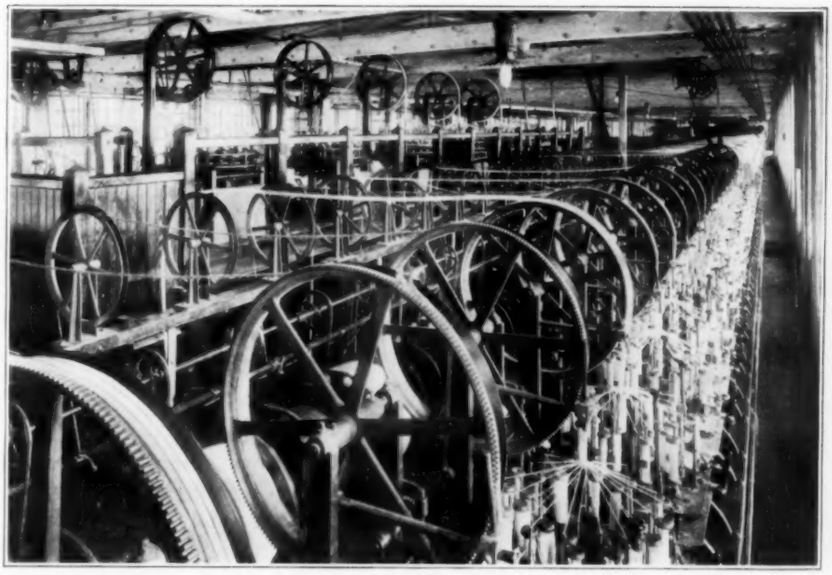
TWENTY-SPINDLE DOUBLER

Pa., and is considered one of the most efficient of these devices. It takes bobbins 1⅞ in. in diameter by 5 in. traverse.

In this type of carrier the top weight, which is usually the greatest source of trouble, is eliminated. The bobbins are placed on the carriers in an inverted position, having the ratchet at the bottom. This permits using either bobbins or tube holders for universal-wound tubes, without any change whatever to the carriers.

As the ordinary top-weight carrier for a 4-in. gear braider takes bobbins 1⅞ in. in diameter by 3½ in. traverse, the yarn capacity of machines having this type of carrier is greatly increased. This means that the number of stops for replacing empty bobbins is materially reduced and the production of the braider increased accordingly.

For braiding, the reel of rubber covered wire is placed in a let-off frame and its end "threaded" through the braiding machine around a take-up capstan, or over an idler and on to a wind-up reel. A transverse guider is provided for laying the wire evenly on the wind-up reels.



BRAIDING DEPARTMENT IN A LARGE AMERICAN FACTORY

Where a heavy, stiff cable is to be braided, either the take-up capstan is of very large diameter or its place is taken by a pair of driven grooved feed rolls, which seize the cable firmly and draw it through the braider at a suitable rate of speed while the braiding process is being performed.

In braiding rubber insulated wires, it is important to get a close mesh braid without having any "pile-ups." If the mesh of the braiding is too coarse the yarns are liable to cut into the rubber, especially if the braiding is performed prior to vulcanization. The result of this would be a weakening of the rubber insulating cover. "Pile-ups," on the other hand, make the braiding loose on the insulation, decrease the efficiency of the protection, and spoil the appearance of the finished product.

*Winding Braider Bobbins*

The yarn used in wire braiding machines is carried either on bobbins or on universal-wound tubes. The bobbins cost less and are said to do better work than can be obtained with the universal-wound tubes. To give good results in braiding the bobbins have to be wound hard and evenly. This winding is performed on doublers similar to the one shown in the accompanying photograph.

"KILTIES" WEARING RUBBERIZED CAPES
*Press Illustrated Service.*

# Technical Course in Rubber Manufacture*

By H. E. Simmons, M.S.

*Professor of Chemistry in the Municipal University of Akron*

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*SECTION IX*

## Different Means of Coagulation

While discussing the different varieties of rubber which come from the various sources, we have called attention in each case to the methods used in their coagulation. Some of these have been primitive and most have lacked a scientific basis. The result of this has been that some rubbers from certain localities have been very good and uniform while those from other places are characterized by lack of uniformity, and therefore are an expensive experiment most of the time.

Of course, at present, the methods of control are most uniform on the plantation and as a result the rubber from these sources is the most uniform found in the market. That leads us to suspect that the wide variance in native rubbers comes largely about on account of the lack of uniform methods of coagulation. This has led men to investigate the different methods in use, with the idea of trying to find some better and more satisfactory process than is at present known. They have been guided by observations of conditions which exist in places from which the various grades are obtained.

We know the rubber from the Amazon to be the most uniform of any wild rubber on the market. When we observe the methods by means of which the seringueiro collects and coagulates the latex from the Hevea and thus obtains Para rubber, we come to the conclusion that the process wherever and by whomever used is one that will produce a uniform product. On the other hand, when we observe the product from Africa and notice the great differences even in the same grades, we are satisfied in our own minds that the methods used must be at fault.

The whole trade recognizes that we have not at present any method of coagulation that is entirely satisfactory. This is very apparent when we realize that even the method which produces the most uniform rubber of all, namely, the plantation, is at present under severe criticism, and chemists are employed to make a thorough study of this whole question and strive to substitute a better one.

This study is based upon certain principles of colloidal chemistry and it is hoped that by the aid of these investigations we are going to be able to bring forth something new and better. We know that the stability of latex from different sources varies, and we have come to the conclusion that this is due to the different size of particles in the different emulsions, to the electrical charge, and to the presence of protective colloids, etc. Fickendey (*Z. Chem. Ind.* Kolloids, 1911, 8, 43) calls attention to the fact that coagulation in general consists in the removing of the proteins or peptones, which serve as protective colloids, and then the neutralization of the electrical charges. Upon the addition of acid to the latex, we effect coagulation in all cases except Funtumia. This latter fact has been explained upon the ground that it is a case of a peptone acting as the protective colloid instead of a protein. However, Spence has shown that the size of the particle in the Funtumia latex has a great deal to do with its stability also, for he removed the peptone by treatment with trypsin and no coagulation resulted. (*Quar. Jour. Reprints*, 1907, 9, 5.)

The Brownian Movements are apparent in the latex and V. Henri (*Le Caoutchouc et la Gutta Percha*, 1908, 5, 2405) took advantage of this to study the effects of acids and alkalis upon it. He found that the addition of acids greatly reduced the velocity of the rubber particles, while alkalis had much less effect. When the acid was increased, the particles seemed to form in a sort of network.

This is interesting from a scientific point of view, but its influence upon the manufacture may be slight, yet today we are having it studied also from the manufacturer's side.

It was to study this problem from this angle that Eaton and Grantham, in the Department of Agriculture of the Federated Malay States, started on what might be called the first scientific investigation of this subject of coagulation and its effect upon the rubber obtained for manufacturing purposes.

The manufacturer had observed the difference, which we find in the mechanical curing of rubber from different sources and in fact from the same source. Some forms of rubber from a certain plantation will cure in a different way than another variety from the same place will do. Corresponding grades from different plantations likewise show different peculiarities in curing. This of course raised the question as to what caused this variance. It led some men to think that in order to use any rubber intelligently, one must know the complete life history of it: where it came from, how it was gathered, how it was coagulated, how it was treated after coagulation, what form it was put into, how old it was, and many more questions.

In the first experiment of Eaton and Grantham, which appeared in the *Agricultural Bulletin* of the F. M. S., they call attention to two assumptions:

(1) That in plantation rubbers there is a great variation, but this comes largely in the rate of cure and not in mechanical properties, since similar mechanical properties can be obtained in the vulcanized material, provided the correct rate of cure of the rubber under specific conditions is known.

(2) That this variation in rate of cure or vulcanizing capacity is due to some substance existing in the latex, or formed subsequently, which in the prepared raw rubber acts catalitically as an accelerator, and that the rate of cure of raw rubber depends on the amount of this substance remaining in the raw rubber, which again depends on the mode of coagulation and preparation. In trying to establish these, they selected what they regarded as a set of uniform conditions for determining what is known as the "optimum cure," that is, the cure which shows the maximum product of elongation by tensile strength. They cured all of their samples at a temperature of 140 C. and took test strips every fifteen minutes. The sulphur content was 10 per cent of the whole mixture.

The first tests were made upon Plain Crepe and Smoked Sheet. Both of these showed the optimum cure at three hours. At this point they received a sample of "Byrne cured slab," and when this was tested out it showed the "optimum cure" at one hour and fifteen minutes. Here we

* This course commenced in the July 10, 1917, issue of THE RUBBER AGE, and will be complete in 27 issues.

have a rubber which cures an hour and forty-five minutes more quickly than plain or smoked sheets, and yet obtained from the same latex. You may immediately realize what this means to the manufacturer of today.

Here two questions presented themselves: (1) Was it due to the Byrne fumes, or (2) the form in which the rubber was prepared? They then prepared what is known as a Byrne Loaf (this is made by rolling sheets cured by the Byrne fumes around a stick, thus building up a solid cylinder of superimposed sheets); this rubber never completely dries in this form and has to be creped and dried before vulcanizing. The results on this loaf, and also upon pressed sheet, showed the optimum results at two hours and forty-five minutes. This is practically the same time as that required for plain crepe or smoked sheet, and therefore points to the fact that it is not the Byrne fumes which cause the variation in the rate of cure.

A sample was then prepared by coagulating the latex in thin layers in shallow pans in a smoke house and thus superimposing further layers daily for a period of a week. By this method a slab of rubber results, and when this was cured up and tested it came to the optimum test in an hour and a half. In other words, a rapid curing rubber had been produced, and we are almost safe in saying from these two tests that the rate of cure is due to the form rather than to the fumes. Further tests revealed the fact that smoked sheets vulcanized more slowly than plain sheets, and hence the conclusion that smoking has a tendency to retard the rate of cure. We may therefore call attention to the following facts:

(1) Slab rubber smoked by Byrne fumes or rubber coagulation by smoke, by superimposing layers of latex, cures much more rapidly than plain crepe or smoked sheet.

(2) Unsmoked sheet cures more rapidly than smoked sheet or plain crepe. Latex was next placed in a large wooden box with movable partitions, so that all might receive the same treatment during coagulation; then from the coagulum the following samples were prepared:

(*a*) Smoked sheet, which showed its "optimum cure" in two hours and forty-five minutes.

(*b* Smoked sheet, creped when dry; this required two hours and forty-five minutes.

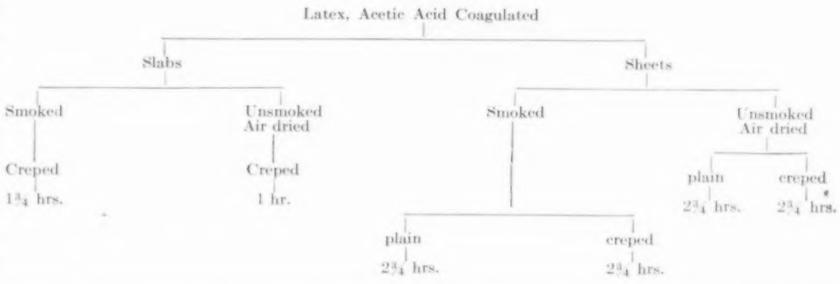
(*c*) Smoked slab, "optimum cure," one hour and forty-five minutes.

(*d*) Unsmoked sheet, "optimum cure," two hours and forty-five minutes.

(*e*) Unsmoked sheet, creped after drying, "optimum cure," two hours and forty-five minutes.

(*f*) Unsmoked slab, "optimum cure," one hour.

TABLE I




The conclusions to be drawn from these tests are that creping of dry sheet has no effect upon rate of vulcanization; also, that slab is the most rapid curing form of rubber; and lastly, that smoking will retard the rate of cure on slab. To explain this behavior, two theories present themselves:

(1) That the latex contains, in addition to the caoutchouc, some constituents which influence the rate of cure of the rubber, this substance not being precipitated by ordinary coagulation. Consequently, the greater the quantity of serum remaining in the rubber, the greater will be the quantity of this substance present in the raw rubber. If this is the case, the effect of smoking is apparently the destruction of this substance.

(2) It may be, however, that this substance does not exist in the latex, but is formed from some constituent of the latter. In this case the retention of the serum in the rubber would appear to encourage the formation of the catalytic substance. Our ordinary methods of analysis of crude rubber, of course, will not reveal the presence of these substances. For instance, we determine the nitrogen in the rubber and calculate it all as proteins and this may be far from the actual truth of the way the nitrogen really does exist. We do know that certain amines have an accelerating effect upon vulcanization, and it follows that perhaps some of these proteins do decompose into amines, and therefore the greater the amount of serum left in the rubber, the greater will be this effect. To strengthen this theory, Eaton and Grantham observed that we get slow curing rubbers from latex treated with preservatives, or from smoked rubbers, which act in the same way. If this change is caused by an enzyme, then the same may be expected for the preservative, or smoke would of course kill it and thus produce a slow vulcanizing rubber.

That this material is present in the latex is also substantiated by the fact that synthetic rubber is very difficult to vulcanize.

Another fact pointing in the same direction is that air-dried slab is the most rapid curing and also has the most serum remaining in the rubber.

Fine hard Para is rather slow curing, due to the fact that the smoke in coagulating has its maximum effect. The "optimum cure" requires from two and one-half to two and three-quarters hours.

The rate of cure of samples from different states shows quite a variance due to many causes, e. g., dilution of latex, working of rubber, thickness of rubber, smoking, rapidity of drying, amount of coagulant, etc. (*Agricultural Bulletin*, Federated Malay States, March, 1915.)

The lack of uniformity in these rubbers is of great importance to the manufacturer, for if by regulating the preparation of the rubber from the latex we are able to procure a rapid curing rubber, then a great deal of cost in the manufacture is saved and a greater output is also made possible with the same equipment and number of men.

Eaton and Grantham have also conducted experiments to find the extent to which lack of uniformity in the mechanical method of procedure in the preparation of rubber from the latex caused variation in the product. (*Agricultural Bulletin*, Federated Malay States, 111, 218, 1915, et seq.) They found:

(1) That after the rubber has once been reduced to a thin sheet, excessive creping has little or no effect.

These conclusions were based upon the results obtained from passing different lots of the same rubber through the creping machine five, ten, fifteen, twenty, and twenty-five times, respectively. Excessive maceration, however, does seem to have a slightly retarding effect upon the rate of cure. An interesting feature of the experi-

ment was shown by repeating the tests on mixtures out of these same samples, made eight months later. These tests indicated somewhat slower cure in the sample creped twenty-five times. This is particularly interesting because of the apparent recovery, which has been so commonly noticed after rubber broken down on the mills has been allowed to stand.

(2) That the use of more acid than necessary to produce coagulation has the effect of slightly retarding the cure. The use of sodium bisulphite has no effect.

(3) That samples of rubber from the same latex were taken at different stages in the preparation as follows: *a*, Coagulated slab and allowed to drain; *b*, after rolling once; *c*, rough crepe; *d*, thick crepe; *e*, thin crepe.

These samples were kept for twenty days; then samples A, B and C were made into thin crepe and all five samples were dried, after which they were compounded similarly and cured. The "optimum cures" reported were: *a*, 1 hr., 30 min.; *b*, 2 hr.; *c*, 2 hr., 30 min.; *d*, 2 hr., 45 min.; *e*, 3 hr., thus substantiating their contention that each step of the process seems to have a retarding influence on the cure.

Continuing on this line, they went further into the effect of drying in hot air driers up to to 2 hr., at 150 deg. F., samples being taken practically as before and also a sample being taken from the drier every hour. All of the samples, which had been in the drier required 3 hr., 15 min. for curing or 15 min. more than the time required for thin crepe.

(4) That tests of the product from the estate handled by the same methods were quite uniform. One interesting thing was indicated through the course of these tests. On two occasions the trees were permitted to rest longer than usual because of rain for a whole day; on another the tapping was late. The quality of rubber obtained from these subsequent tappings was above the average.

(5) That the following experiments indicated the effects of leaving the coagulatum in slab form for ten days before curing:

*a* Block prepared as usual on the day following coagulation, cured in 3 hr., 15 min.

*b* Block prepared after leaving coagulum from some of the same latex in the slab form ten days before creping, blocking and drying, cured in 1 hr., 15 min.

*c* Slab, prepared the same as B, cured in 1 hr., 15 min.

Sodium bisulphite had no effect when used in parallel experiments. The mechanical qualities of *a* were also inferior.

By mixing proportionate amounts of fast and slow curing rubbers together, the rate of cure may be adjusted to uniformity. They explain the uniformity of fine hard Para by the fact that a single fall represents latex collected day after day for a period of months. In passing, it is but fitting to note that many compounders prefer to use a mixture of rubbers in their stocks so that the variation in different lots of each may be averaged and a more uniform product obtained.

An attempt has also been made (*Agricultural Bulletin*, Federated Malay States, IV, 1, 1915) under the direction of Mr. Eaton to determine the influence of the nitrogen content on the cure with the possible view of regulating this factor to the best advantages. Their data may be summarized as follows:

| Type of Rubber | $N_2$ | Cure |
|---|---|---|
| Smoked sheets | 0.445 per cent | 3 hr. |
| Smoked sheets after creping | 0.441 per cent | 3 hr. |
| Smoked slab after creping | 0.451 per cent | 1¾ hr. |
| Unsmoked sheet | 0.423 per cent | 2¾ hr. |
| Unsmoked sheet after creping | 0.434 per cent | 2¾ hr. |
| Unsmoked slab after creping | 0.321 per cent | 1¼ hr. |
| Thick smoked slab | 0.425 per cent | 1½ hr. |
| Thin smoked slab | 0.398 per cent | 1¾ hr. |
| Thick smoked sheet | 0.400 per cent | 2½ hr. |
| Thin smoked sheet | 0.416 per cent | 3 hr. |
| Thick unsmoked slab | 0.210 per cent | 1¼ hr. |
| Thin unsmoked slab | 0.352 per cent | 1½ hr. |
| Thick unsmoked sheet | 0.386 per cent | 2½ hr. |
| Thin unsmoked sheet | 0.394 per cent | 3 hr. |
| Unsmoked slab dried externally, results calculated on 82.7 per cent dry rubber | 0.307 per cent | |
| Sliced slab heated to 100 deg. C. till dry | 0.240 per cent | |
| Dry crepe from slab (dried without heating) | 0.218 per cent | |

Results on the following data calculated on the basis of the dry rubber present:

| | |
|---|---|
| Wet slab 2 hr. after pressing | 0.600 per cent |
| Wet slab after drying thirteen days | 0.324 per cent |
| Dry crepe from slab | 0.220 per cent |
| Wet crepe made immediately from wet slab | 0.396 per cent |
| Above crepe when dry | 0.360 per cent |

We may summarize the above data in the following conclusions:

(1) Among smoked rubbers from the same latex the nitrogen content is constant, although the rate of vulcanization varies considerably between slab and sheet. Smoking appears to fix the nitrogen.

(2) Among unsmoked rubbers from the same latex there is a considerable variation in the nitrogen content of the rubber after creping preparatory to the vulcanization process. It is small in the case of rapidly vulcanizing rubbers and larger in the case of the more slowly vulcanizing ones.

(3) The low percentage of nitrogen in rubber prepared as unsmoked slab is attributed partly to loss in the gaseous form during the superficial drying of the slab, and partly to the washing out of nitrogenous decomposition products when the slab is creped prior to vulcanization.

(4) Since rapidly vulcanizing smoked slab rubber contains as high percentage of nitrogen as slowly vulcanizing sheets, the actual loss of nitrogen cannot be the cause of rapidity of vulcanization, although it would appear from the results of the unsmoked rubbers that rapidity of vulcanization and loss of nitrogen are in some way associated.

Eaton and Day (*Agricultural Bulletin*, Federated Malay States IV, 350, 1916) have followed the change of the nitrogen content through the different stages of handling the latex. The results are summarized in the accompanying chart. (Table II).

The same coagulum converted directly to sheet and crepe on the day following coagulation contained 0.40 per cent nitrogen, or about twice as much as the other.

In 1912 Whitby presented before the Congress of Applied Chemistry, a paper in which he made the claim that the natural coagulation of Havea latex was brought about by a coagulating enzyme.

Eaton and Grantham carried out a series of experiments along this line and came to the following conclusions (*Agricultural Bulletin*, Federated Malay States, Nov., 1915):

(1) That this natural coagulation of the latex of Hevea braziliensis is due to certain bacteria which infect the latex after coagulation.

(2) That these are two distinct

TABLE II

Latex. ($N_2$ content 0.11%)

- Wet coagulum 67 parts, by weight. $N_2$ 0.15%
  - Pressed
    - Wet coagulum remaining 50 parts $N_2$ 0.26% which is equivalent to 0.78% $N_2$ on dry rubber present.
      - Hand rolled after standing six weeks to 19.1 parts containing 0.20% $N_2$ or an equivalent of 0.23% $N_2$ on the dry rubber present.
        - Washed, creped and dried gave 16.4 parts of dry rubber containing 0.19% $N_2$; the loss here was probably mechanical due to the removal of the surface scale which had formed and which was high in proteins.
    - Serum pressed out 17 parts—S. G. 1.011 $N_2$ 0.07%
- Serum 33 parts (S. G. 1.009) $N_2$ 0.06%
  - Held for 14 days with no evaporation $N_2$ 0.04%
    - Held for 60 days with no evaporation $N_2$ 0.03%
      - No further loss in $N_2$.

types of organisms, one favored by aerobic conditions, which tend to inhibit coagulation, and the other favored by anaerobic conditions, which affect coagulation of the latex.

(3) That the coagulation of the latex under anaerobic conditions is not constant, on some days complete coagulation occurring and on others much less complete, possibly due to a variation in the constituents of the latex.

(4) That by the addition of various sugars, coagulation under both conditions always occurs and is due in their opinions to the fact that a medium is formed more favorable for the organisms, which produce coagulation, and less favorable to those producing putrefactive changes.

In a previous article by these men they called attention to the fact that an excess of acetic acid in coagulation retards the rate of cure and upon biological grounds it is explained that the micro-organisms which produce accelerating substances are killed. To investigate this point, some rubber was coagulated with acid and then soaked in alkaline solutions, thus producing a more favorable medium for biological changes to occur. Slab rubber was the form chosen with which to carry out the test. The results were that the rubber cured in about one half the normal time. Whether this is to be explained upon purely a chemical or biological basis remains for further research, which has been attempted at a more recent date.

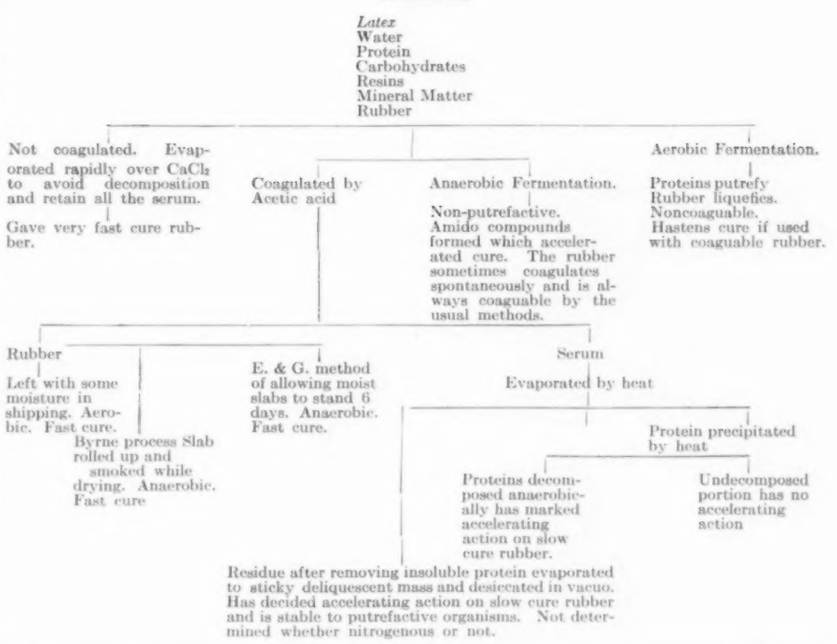
If the preceding assumptions are correct that there exists in the rubber some substance which has the power of decomposing into accelerating compounds, the question arises, What is the period during which the change in the raw rubber causing acceleration of rate of cure takes place?

To answer this question, the two experimenters, above referred to, coagulated some latex, then from the coagulum removed a sample creped, wormed, dried it in a hot air drier and then blocked it on the same day as coagulated. The next day a new sample was taken from the original coagulum and treated in the same manner; the following day another sample, and so on until they had ten samples taken in as many days. These were then milled up and cured, tested, and the following conclusions were drawn:

(1) That the rate of cure increases until the sixth day and then remains practically constant.

(2) That the greatest change occurs in the first three days. It is perfectly safe, however, to crepe the rubber after the tenth day and it will remain constant after that time.

TABLE III


Latex
Water
Protein
Carbohydrates
Resins
Mineral Matter
Rubber
Not coagulated. Evaporated rapidly over CaCl2 to avoid decomposition and retain all the serum.
Gave very fast cure rubber.
Coagulated by Acetic acid
Anaerobic Fermentation.
Non-putrefactive.
Amido compounds formed which accelerated cure. The rubber sometimes coagulates spontaneously and is always coaguable by the usual methods.
Aerobic Fermentation.
Proteins putrefy
Rubber liquefies.
Noncoaguable.
Hastens cure if used with coaguable rubber.
Rubber
Left with some moisture in shipping. Aerobic. Fast cure.
Byrne process Slab rolled up and smoked while drying. Anaerobic. Fast cure
E. & G. method of allowing moist slabs to stand 6 days. Anaerobic. Fast cure.
Serum
Evaporated by heat
Protein precipitated by heat
Proteins decomposed anaerobically has marked accelerating action on slow cure rubber.
Undecomposed portion has no accelerating action
Residue after removing insoluble protein evaporated to sticky deliquescent mass and desiccated in vacuo. Has decided accelerating action on slow cure rubber and is stable to putrefactive organisms. Not determined whether nitrogenous or not.

Even samples that have been aged seem to retain their accelerating bodies.

In the above, attention was called to the remarkable accelerating action, which alkalis have upon rate of cure and it was suggested that this might be due either to a biological effect or to a purely chemical one. Eaton investigated this point in the following manner:

Samples of both fast curing and slow curing rubbers were taken and soaked in dilute alkaline and acid solutions for twenty-four hours, then milled, cured and tested, comparison being made in each case against a control sample.

It was found that the alkalis had a marked accelerating action upon the rate of cure, which was apparent in both the fast and slow curing rubbers, while acid had a pronounced retarding effect. These tests were carried out with finished dried crepes so that the biological effect was eliminated and thus the chemical action made more certain. However, just the way in which this chemical effect takes place is not known. The evidence seems to point to the action of the alkali upon certain constituents in the rubber. The retarding effect of mineral acids is especially noted with quantities beyond the minimum required for coagulation; therefore, the serious question of trying to substitute sulphuric acid in the place of acetic as now used.

Attention has also been called to the fact that rubbers which have been treated with alkalis do not show good tests upon aging.

Let us hope that more work along this line will follow and that better methods of coagulation will be found, thus producing more uniform rubber from the manufacturer's viewpoint.

### Student Fellowship Open

It is announced that the Municipal University of Akron, Ohio, has open a fellowship at the Firestone Tire & Rubber Co.'s factory recently made vacant by the drafting of the previous recipient. Information regarding the method of reappointment may be obtained from Dr. H. E. Simmons, head of the Chemistry Department of the university. The university and the factories offered this industrial fellowship to college graduates who had taken certain prescribed chemical courses.

The fellowship is supported by an annual contribution of $300 from the tire company and is open to the graduates of standard American colleges under the following conditions: (1) The applicant shall have successfully completed the following undergraduate courses in chemistry: general inorganic chemistry, qualitative analysis, quantitative analysis and organic chemistry; (2) he shall be recommended by the institution from which he has been graduated, as a student of excellent ability; (3) he shall accept the appointment with the purpose of entering the employment of the company providing the fellowship, at the end of the year's course; (4) he shall be exempt from the payment of all fees at the University and shall devote twelve hours a week as instructor in chemistry.

# Manufacture and Development of Fiber Soles*

By A. B. Kempel

*General Manager, Rex-Hide Rubber M/g. Co.*

I am a fiber enthusiast. I am an enthusiast, not because I am in the business, but rather I am in the business because I am firmly convinced that the fiber sole is so necessary to the comfort of the shoe wearing public and has such possibilities of development and improvement that anyone who associates himself with the industry, either as manufacturer or consumer, cannot help but profit thereby. Knowing the rubber industry and appreciating the great improvements that have been made in tire construction in the past few years, one can readily vision a fiber sole which will outwear any upper that can be made, and this will come very soon.

The fiber sole when first produced had many shortcomings. It was made entirely from a rubber man's standpoint. It did not hold the stitches any too well, the shanks were too thin, the edge would not finish, and numerous other troubles developed in the shoe factories. But the rubber manufacturer was quick to remedy these faults as they appeared, and today the fiber sole, while not perfect, is a very satisfactory and meritorious product.

### *Old Prejudices*

The fiber sole met many obstacles in its introduction. It had first to overcome the old prejudice against rubber soles, which dates from that time, several years back, when many shoe manufacturers permitted themselves to buy the very cheap rubber soles offered them. Furthermore, the leather sole had been used for so long that the shoe manufacturers had developed special machinery for handling them and had become so accustomed to the manufacturing difficulties in connection with their use that they were apt to overlook these difficulties, while some small objectionable feature of the fiber sole was given great attention. The fiber sole industry today is the greatest existing monument to the power of advertising and too much credit cannot be given to those concerns who did so much to establish it. One of the greatest virtues of the fiber soles from the shoe manufacturers' standpoint is its uniformity. Some makes are uniformly bad and the others are uniformly good, but all the soles of any one make are uniform. The fiber sole or any other artificial material which may be devised to replace leather soles, can be made absolutely uniform as to wearing qualities, appearance and thickness and will give uniform wear throughout its entire life.

### *The Perfected Fiber Sole*

The perfected fiber sole should have the following characteristics:

First:—It should outwear any upper that can be made. Many brands now on the market outwear the uppers of medium-priced shoes. This feature can be easily obtained by the use of less fiber and more rubber in the compound, but this change sacrifices stitching and finishing qualities. This desired effect will probably be produced by the use of a better wearing fiber.

Second:—The sole will be foolproof as regard stitching, that is, the fibers should be so strong and so interlaced that the tension will break a No. 6 or No. 7 thread without cutting through the sole. This result will be obtained only after the sole manufacturers have developed special machinery and methods for preparing the fiber, and for incorporating the rubber with it.

Third:—The sole should have a rough back. This will make the cement hold securely and is merely a matter of mechanical development with the sole manufacturer.

Fourth:—The sole should be stiff crosswise and flexible lengthwise. The stiffness crosswise will prevent the welt from turning up and will assist the shoe in holding its shape. The flexibility lengthwise will prevent cracking across the ball of the foot, and will give greater comfort in walking.

Fifth:—The shank should not be more than two irons thinner than the ball. The shoe manufacturers all appreciate this point and the sole manufacturers can readily accomplish this by a slight change in their mold equipment.

Sixth:—The sole should not be too soft. It must be stiff enough to form a good foundation for the shoe and to prevent the wearer feeling the inequalities of the road. Conversely it must not be so stiff as to break across the ball of the foot or in the stitches. It is in producing a stiff and at the same time tough sole that the rubber compounder can find his greatest field for experimental effort.

Seventh:—The sole should finish neatly on the edge. This result will be brought about by the sole manufacturer improving his product in this respect, the blacking manufacturers developing an edge stain which will unite with the fibre or the rubber, and by the shoe manufacturers improving their methods of application.

The edge finish on most fiber-soled shoes has improved greatly in the past year.

### *Fiber Sole Compounding*

The high grade fiber soles are today all made in practically the same way as regards mechanical handling, the variation in their different properties being the result of their different chemical composition. The compounds have as their base crude rubber, which resists abrasion better than any other known substance. The amount of rubber that can be used is limited, as too much rubber produces an objectionably soft and flabby sole. A certain amount of reclaimed rubber can also be used as it has good wearing qualities and does not materially soften the sole. Sulphur is necessary to produce vulcanization. Lamp black, iron oxide or zinc oxide are used to give the desired color. Small amounts of other materials, known as curing agents, are added to hasten and give a more uniform vulcanization, such as lime, magnesia, litharge or various aniline products.

Then lastly comes the fiber. This is the new ingredient in the rubber man's experience. The question of which fiber to use, how much to use, how to prepare it and how to unite it and the rubber without breaking the fiber opens an endless field for experimental work. There are fiber soles on the market today using silk, hemp, cotton, jute, ramie, wool, asbestos and leather fiber. The writer spent over one year on the preparation and mixing of cotton fiber only, and still feels he has not covered the subject. The same experiments could well be repeated using all the other fibers with profit to the experimenter.

### *Method of Making*

The universal method of making fiber soles is to mix the various ingredients with the rubber as a binder, on two parallel and horizontal rolls which knead the materials into a uniform dough-like mixture. This mixture is then passed through a calender to form a sheet. The soles are cut from this sheet, placed in molds and vulcanized under pressure, which produces the very substantial and homogeneous product with which you are familiar.

* From *Shoe and Leather Reporter*.

W. D. MOFFAT
PRESIDENT

W. I. SEAMAN
TREASURER

ROBERT BROWN
SECRETARY

# THE RUBBER AGE AND TIRE NEWS

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BUSINESS MANAGER

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FOR years there has been a feeling in the United States that our complex system of weights and measures should be supplanted by a more simple, scientific and international decimal standard. This has been advocated by many scientists and it would seem that an opportune time, in which to attempt to make the change to the metric system, is at hand.

It will be recalled that several of the larger rubber companies have anticipated this condition and have already taken steps to educate their employes in the metric system; folders have been distributed in factories containing metric conversion tables and employes have been asked to learn the metric equivalents for the more common American weights and measures.

The war has caused many foreign buyers to turn to the United States for their needs. These orders have come in with metric specifications to meet the requirements in the countries where the goods are to be used.

The original attitude of American manufacturers was to make others conform to the older English standards. Now that large orders are coming from overseas, manufacturers are beginning to realize the necessity of adopting the metric system.

After the war there will undoubtedly be an attempt on the part of the warring European nations to reassert themselves commercially. This will mean keen competition and only the American manufacturer who is able and willing to quote in the universal standards will be in a position to capture new business or keep his present foothold. Such a revolutionary change in standards for measurements, it is claimed, will cost the country between one and two billion dollars, but this amount is small in comparison to the great financial benefits which will accrue in future years. The change, of course, must be gradual, but all concerns intending to compete with foreign manufacturers should realize now the necessity of changing to the more logical and scientific system.

## The Labor Problem from a National Viewpoint

War has changed the viewpoint of manufacturers generally as to the labor problem. In times of peace, the tendency was for each employer of labor to look upon it from the angle of his own business interests. Now, however, there has been a radical change. Everybody worth while is placing personal interests secondary to national necessity, and practical patriotism is in evidence on every hand.

There is a decided shortage of male and female help and the time will soon come when there will be a positive stringency in the labor market. Vital industries will require more help then than now and patriotic manufacturers of non-essentials in many lines will curtail production in order to release men and women to do the work that is most needed.

This will mean financial sacrifice to many, but when it is fully realized that our country is at war no sacrifice will be thought too great for the stay-at-homes to offer, and it is believed that the adjustment to the new conditions will be met with the same spirit of cheerfulness and willingness as has always been shown by the American people in time of national necessity.

## Special Tire Brands

The frequent price changes in the tire industry are, in part, due to the method of distribution of tires. It is evident that this industry is comparatively new and has not as yet found its level, but the time is near at hand when tires will become more and more standardized and will be sold more as a commodity than as a specialty.

The successful pushing of special brands by the wholesale hardware trade and the large tire distributors points to this tendency. For years special brands of merchandise offered by the hardware jobbers were not looked upon with favor by the public and dealers, but when some well sustained lines of quality acquired national reputations these brands became esteemed and respected. Such a tendency is not unlikely in the tire business, and the result of a more general distribution of tires by the hardware trade would make for uniformity in selling prices.

## The German Patents

The recently announced intention of our Government to license German patents for manufacture might properly direct the attention to the difference in methods used by the United States and by Germany in dealing with the disposition of patents during war time. America is licensing the manufacture of various articles protected by enemy-owned patent rights to manufacturers who can prove the necessity and their ability to make the articles, with the provision that the owners of the patents shall be reimbursed after the war to an extent determined by the Federal Trade Commission. The German system is to use our patents, registered in the patent office in Berlin, and then direct their attack upon this country with the help of our ideas. It is to be hoped that before any payments are made to holders of enemy-owned patent rights Germany will be forced to fully reimburse American owners of German patents for the rights which she has so readily violated.

# News of Interest to the Rubber Industry

*Productive Power of Rubber Boot and Shoe Manufacturers Devoted to Equipment of American Army—Government Officials to View Moving Picture on Rubber—Somerset Men Contribute to Red Cross—The Trade in a Parade*

### Large Rubber Boot Contract

Announcement was recently made of a contract made for the supply of 15,000 pairs of boots for the Belgian Army.

Most of the larger rubber boot and shoe manufacturers of the United States, after a conference in Washington, notified the National Council of Defense that they will suspend for forty-five days the execution of large outstanding contracts for rubber footwear for private account and even for foreign order in order to devote all their productive power to the equipment of the American Army.

SOMERSET MEN WILLINGLY CONTRIBUTE TO RED CROSS

### Make a Weekly Red Cross Collection

American rubber companies and their employes have made generous contributions to the various Red Cross funds, but it is believed that the Somerset Rubber Reclaiming Works, New Brunswick, N. J., are the only concern making weekly collections for the benefit of the organization.

By an arrangement with Mrs. J. R. Cooper, chairman of the Somerset County Division of the Red Cross, a Red Cross nurse visits the Somerset Works each week and accompanies the paymaster on his rounds in each department. When the workmen receive their pay envelopes the nurse extends her collection box for the man's donation and the individual donations range from five cents to $5, everyone responding with great willingness.

The collection from the night shift is made by the night superintendent, who turns his collection over to the office to be given to the Red Cross nurse on the following day.

In drawing the payroll the company makes certain that in each envelope there is at least $1 in small change in order to allow no excuse for not contributing. Thanks to this method the weekly contributions for the past six months have averaged better than $25.

The management of the Somerset Rubber Reclaiming Works also takes part in other local Red Cross activities. Recently it donated and erected a dancing pavilion and booths for placing merchandise before the public at a country carnival. It also purchased tickets for all of its employes for a dinner that was served under the auspices of the Red Cross. The net profit to the Red Cross on this festivity amounted to $400.

The advertising for the Red Cross Carnival was also carried out at the expense of the Somerset Works. Large signs were painted and placed on one of their motor trucks which carried musicians to attract the attention of the public throughout the county. This brought many people from neighboring towns and created a wonderful spirit throughout the community.

### New York Rubber Men Parade

To show their faith in one of the candidates running for Mayor in New York, John Purroy Mitchel, a band of 500 men allied with the rubber industry in the Metropolis marched five miles through the streets on the night of Nov. 1. The parade brought out many of the most prominent rubber men of the city and showed their enthusiasm for anything in which they are vitally interested.

This spirit seems to pervade the entire trade and speaks well for the industry during the trying moments of the war. Every man had a flag and a torch, presenting a wonderful sight to the admiring crowds which lined the entire route.

Robert C. Fisher was in charge of the arrangements and was gratified at the large number who responded to his call. Others on the committee were: W. E. Bruyn, H. Hubbard, W. G. Ryckman, A. Spadone, C. T. Wilson and H. S. Vorhis.

### Mrs. W. W. Wildman Is Dead

Mrs. Della T. Wildman, wife of W. W. Wildman, general manager and treasurer of the Portage Rubber Co., Barberton, Ohio, was instantly killed near her home in Fairlawn when her automobile was wrecked by a Northern Ohio passenger train. She died in the Akron City Hospital soon after the accident. Her husband and son, William, survive.

The accident occurred within sight of the Wildman home. Mrs. Wildman was alone in her sedan car and was starting for Akron. She failed to see the train as she drove upon the tracks. Eye-witnesses say the wrecked automobile was carried 300 yd. before the train was brought to a stop.

### Federal Rubber Meeting

A three-day meeting of the district managers and district representatives of the Federal Rubber Co. was recently held at the plant in Cudahy, Wis. Sixty-five men from every part of the United States were in attendance.

On the first day General Manager B. H. Pratt told of the additions to the plant which are being made. Four buildings are being erected, the size of the office is being doubled and an addition to the power plant is being built.

Other addresses were made by General Sales Manager H. A. Githens, Factory Superintendent Arthur A. Frank and Charles Measure.

In the afternoon the plant as inspected.

On the second day Mr. Githens gave an address on "1918 Sales," and A. L. de Vault, social representative, discussed the subject "Sundries and Tubes." At the afternoon session J. M. Tait, assistant treasurer, spoke on the "Relation of Credits to Sales;" G. H. Hamilton, assistant general sales manager, on "Representing the Company;" D. H. Roberts, manager of the pneumatic sales department, on "Bicycle Tires and Repair Materials," and A. J. Zealley, advertising manager, on "The 1918 Advertising Campaign."

"Service" was the subject of an address delivered on the last day by A. J. Willson, manager of the service department.

The other speakers were Mr. Githens on "Facts and Figures;" R. M. Lauer on "Accounting Methods," and Mr. Tait on "Credits and Collections." The meeting ended with a dinner in the Hotel Pfister.

### Government to Inspect Rubber Movie

The advertising department of the Diamond Rubber Co. has received a communication from Francis Holley, Director of the Bureau of Commercial Economics, Department of Public Instruction, asking for a print of the negative of the moving picture, "The Romance of Rubber," which was recently shown in New York City under the direction of N. E. Oliver of New York, sales manager of the Diamond Rubber Co.

This picture has attracted considerable attention wherever it has been shown and it is the intention of Mr. Holley to show the picture to Government officials in Washington, including members of Congress and various Department heads.

### Pearce Taking Bids

The Pearce Rubber Corp., 932 North Broad street, Philadelphia, Pa., is taking bids for the erection of a two-story plant, about 160 x 225 ft., at Lippincott and Twenty-first streets. It will cost about $150,000.

# News of the Rubber Metropolis

*New Fame for the "Rubber City"—Goodyear's Various Activities—Convention of Mason Salesmen—Goodrich's Estimated Business This Year $85,000,000—Goodyear's Aeronautical Course*

### Akron in the Hall of Fame

*(Special Akron Correspondence.)*

Akron has suddenly sprung into a new fame, that of being one of the most written about cities in America. In the last sixty days no less than half a dozen times have magazines of national circulation mentioned the "Rubber City" either as the chief subject, or background of the article. Newspapers, even as far away as Texas, have been featuring the remarkable "Rubber Metropolis" and its industry as one of the wonders of the world.

### Goodyear Diet Squad

*(Special Akron Correspondence.)*

Goodyear is going to find out just what is best for its workers in the way of brain and brawn foods. On the results of the investigation will depend the future menus of the Goodyear restaurant.

Starting Nov. 5, twelve employes, six men and six women, selected from the various departments so as to embrace all kinds of work, began a ten-day diet under the direction of Miss Olive Caple, the company's dietician. During the test period only foods selected and prepared by Miss Caple will be eaten by the diet squad.

At the end of the ten days the twelve men and women will again start eating anything they choose and at the end of the second ten days the results will be carefully compared and the restaurant menus adjusted accordingly.

### Tire Repairers in the Army

*(Special Akron Correspondence.)*

Volunteers for the United States tire repair service, connected with The Army both at home and abroad, are now being called. Men who have had the necessary experience can enlist through their labor department foremen.

At the Goodyear Tire & Rubber Co.'s plant, applicants have been requested to send their names to C. V. Hannum of the labor department. They will be examined by D. R. Kane, of the tire repair school and then recommended to the Government.

### Factory Course in Aeronautics

*(Special Akron Correspondence.)*

Although the school at the Goodyear factory has long been considered modern, it will now become ultra-modern by the addition of a course in aeronautics.

Blanks have already been distributed throughout the factory for the benefit of Goodyear employes, who desire to take the course two evenings a week.

As a considerable amount of mathematics is required none except those who have had a high school course, or its equivalent, will be permitted to enter the new class. A small tuition fee to cover necessary expenses for experimental equipment and the like will be charged.

The school is the result of suggestion by Goodyear men, who pointed out that a company so largely engaged in the manufacture of aircraft should devise some method of teaching its own employes the ways of the air.

Should the war continue it is very likely that the services of balloon experts turned out by the Goodyear would be immediately requested by the Government. They could be used to instruct young aviators in the Army and Navy Aviation Sections.

### Safety First Ladders

*(Special Akron Correspondence.)*

Equipped with a pair of keen-edged axes, J. M. Shepard and S. Mansfield of the Goodyear "Safety First" department recently made a round of the factory and office buildings and hacked to pieces seventy-two ladders.

They scouted through every department and on every roof and in every basement. Wherever a home-made or wabbly ladder was discovered it was immediately reduced to kindling wood. All ladders must conform to certain standards and be equipped with safety shoes.

### Mason Salesmen in Convention

The Mason Tire & Rubber Co.'s salesmen recently gathered in a two-day convention at the factory and general offices at Kent, Ohio.

At the conferences of this convention plans were thoroughly worked out for increasing business during the coming year. The time devoted to business sessions was taken up with discussions of the many problems that face salesmen in marketing a tire. One whole day was devoted to a trip through the factory and every process in the manufacture of a pneumatic tire and tube was shown to the men. They spent a good deal of time in the Mason laboratory, which is one of the most complete of the smaller rubber companies, and studied the methods there used to check up the processes.

The banquet, which followed, was held at the Portage Hotel, Akron, and was very successful. John H. Diehl, sales manager, acted as toastmaster.

The principal outside speaker was H. H. Kynett of Philadelphia, who spoke on "The Relation of the Industry to Advertising."

O. M. Mason, president of the company, spoke of the advantages gained under the new Federal Reserve law in matters of trade acceptances.

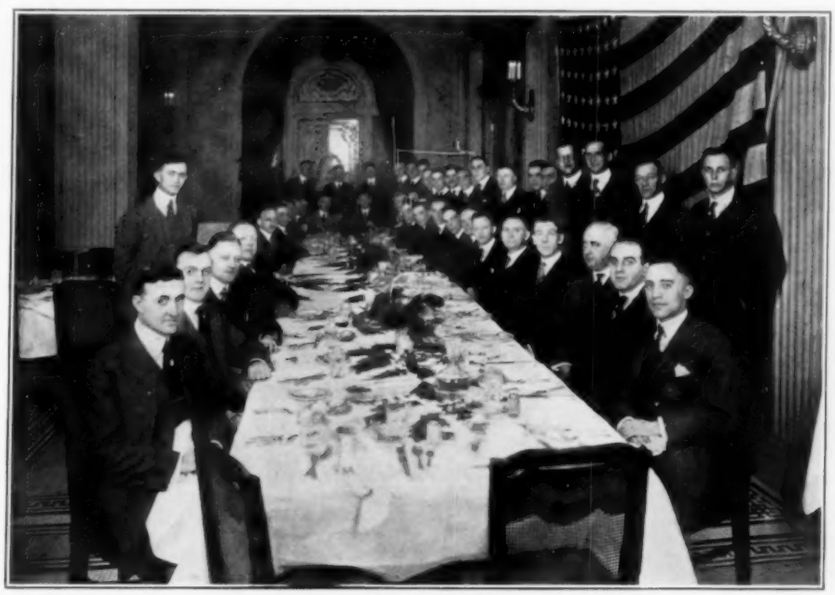
General Manager D. M. Mason spoke on "The Present and Future Prospects of the Tire Industry."

George C. VanVeen, manager of the Chicago branch, made an address on the "Relation of the Branch House to the Home Office."

Talks were also made on efficient methods of securing new business in branches by H. C. Smith, manager of the Kansas City branch; E. H. Sims of the Atlanta branch; Lee O. Miller, New York City branch manager, and A. A. Fickel, manager of the Cleveland branch.

R. W. MacKinnon, secretary, spoke on "The Sound Financial Condition of The Mason Co."

D. J. T. Kennedy, advertising manager, spoke on the subject, "Know Your Product." He emphasized the relationship between advertising and sales and the close harmony which should prevail between selling and advertising.



BANQUET HELD BY MASON SALESMEN IN AKRON

### Goodrich Issues Stock

In order to take up its outstanding indebtedness, the B. F. Goodrich Co., Akron, Ohio., will issue $15,000,000 of 6 per cent notes to cover a period of two years. The issue will be in serial form and will facilitate the carrying of unusually large inventories of raw materials made necessary by the war. There will be no public offering of the notes.

The company is earning more during the present half than it did in the first six months of 1917. Net profits in the first half of the year amounted to $5,200,000; for the whole year it is expected to reach $10,500,000, exclusive of a war tax of nearly $1,500,000.

Preferred dividends will take slightly over $1,800,000 this year, which would leave $7,200,000 for the $60,000,000 common stock. This is equal to $12 a share for the junior issue. In 1916 Goodrich earned $12.76 a share on the common.

Net earnings of $7,200,000 for the common stock, as estimated for this year, compared with $7,657,000 in 1916; $10,317,000 in 1915; $3,371,000 in 1914, and $668,164 in 1913.

Sales in the current year are running at an annual rate of better than $85,000,000 as compared with $70,990,782 in 1916, and $55,416,866 in 1915.

# War Measures Adopted by the Government

*Articles Exempted by Exports Administration Board from License Requirements—Trading with the Enemy Act—Recommendations by the Council of National Defense and Chamber of Commerce on Industrial Cooperation*

### Additional Exports Restrictions

The Exports Administrative Board has determined that the below mentioned articles of particular interest to the rubber trade do not require an export license at present except when shipped to Albania, Austria-Hungary, that portion of Belgium occupied by the military forces of Germany, Bulgaria, Denmark, her colonies, possessions or protectorates, Greece, Leichtenstein, Luxembourg, The Kingdom of The Netherlands, Norway, Spain, her colonies, possesions or protectorates, Sweden, Switzerland or Turkey (excluding any portion of the foregoing occupied by the military forces of the United States or the nations associated with the United States in the war), or any territory occupied by the military forces of Germany or her allies.

The Board has further determined that if any of these articles are subsequently classified as requiring a license, nevertheless, they will in general be allowed to proceed without license when covered by ocean bill of lading or by railroad bill of lading marked "For Export," dated on or before the date classified.

There may, of course, be some special instances where for certain reasons the embargo will have to be effective immediately regardless of when the goods were shipped, but these cases will be rare and special attention will be called to them at the time publicity is given to the fact that they have been classified as requiring a license.

All future classification lists will give the date of classification and will be given publicity so as to minimize any question in the minds of shippers or carriers as to what articles do and what articles do not require a license.

The articles are as follows: Acetic acid, automobiles and parts, balata sheets, carbon black, gum arabic, motor trailers, motor cycles, muriatic acid, paraffin, pyragallic acid, rubber, rubber-cement, trucks tire rims, zinc white, zinc oxide, aniline colors, tire tape, magnesia, gilsonite, asbestos, Bismark brown, hose, hydrated lime, artificial leather ocre, hard rubber articles, ultramarine blue, vulcanizers, proofing solutions.

However, the following chemicals will require export license, Form A-3, when it can be proven that they are destined for actual war purposes: acetone, caustic soda, cottonseed oil, glycerin, nitric acid, sulphur, sulphuric acid and toluol.

### Trading with the Enemy

Upon the declaration of war between the United States and Germany commercial intercourse between persons in Germany and persons in the United States became unlawful, and it became legally impossible for a person in one country to make a contract with a person in the other. Courts have long held that there cannot simultaneously be war for arms and peace for commerce,—that when international war exists all commerce between the territories of belligerents, except as specially permitted by government authorities, is contrary to public policy.

But the bill recently passed by Congress goes still further and provides for more stringent control of intercourse with Germany.

Every vessel bound to foreign ports must deliver to the collector of customs a sworn statement that, so far as is known, the cargo is not shipped, or to be delivered, contrary to the provisions of the bill, and upon arrival at destination must deliver copies of statement and manifest to the American Consul. Shippers will have to make similar statements, giving names of actual consignees. Copies of these statements, too, are to be delivered by the vessel to the American Consul at the port of arrival.

Regarding transportation and communication there are separate provisions. A citizen or subject of Germany cannot, with knowledge or reasonable cause for knowledge, be transported into the United States or out of it nor be carried by an American vessel between ports of other countries.

Letters and other tangible forms of communication which enter the United States or leave it will have to go in the regular course of the mail, even though in their origin and address they have no connection with Germany. All forms of direct and indirect communications with Germany,—by mail, wireless, or otherwise,—are forbidden.

Exceptions to the prohibitions of the bill are made expressly in connection with patents, trademarks, and copyrights. A person in Germany may file in the United States an application and may prosecute it, paying both official fees and fees of attorneys. If conditions attending the war prevent him from filing application, he may be granted a total period of 14 months after the war in which to act. These privileges are conditioned upon extension of like privileges by Germany to Americans.

An American citizen, too, is to be allowed to file similar applications in Germany, and pay fees there, on condition that he first obtain license from the President.

If these prohibitions of the bill were absolute many hardships might result. In many ways the severities of the prohibitions will be mitigated by licenses which, in proper cases, will be issued by the President or by agencies acting under his direction. A separate license will be required for each transaction of some kinds, and in other instances general licenses will undoubtedly be issued for classes of transactions.

### War Convention's Recommendations

To bring about immediate action by American business on the resolution passed at the recent war convention at Atlantic City recommending that each industry form a committee to represent that industry and to serve as a connecting link between it and the Government, suggestions are given in a war bulletin issued by the committee of the Chamber of Commerce of the United States cooperating with the Council of National Defense.

To the established business of the country, the bulletin declares, it is vital that the vast requirements of the Government for material and labor be met in a manner to interfere as little as possible with essential industry and in a way to maintain as far as possible in these abnormal times the normal structure of business.

Many lines of industry are seriously affected by inability to get necessary material or labor and face serious problems for the future in connection with the shifting of labor from one community to another. Because these are problems, not only of the individuals in an industry, but of the industry as a whole, the industry should organize and act in the common interest. These are problems not only of business but also for the Government because it is essential to the winning of the war that the industrial life of the country be maintained in sound condition.

To procure war materials and supplies in the vast quantities required, the Government needs the advice and assistance of men having thorough acquaintance with each industry. Also the Government is confronted with great problems in connection with the regulation of prices and distribution and to avoid unnecessary interference with business, needs at its service the practical knowledge and experience which could be furnished by such committees.

It is thought that such war service committees might undertake the following:

1. To assemble accurate information with respect to the facilities of the industry, the possibilities of expansion or the readjustment of plants and equipment to meet the ever-increasing requirements of the Government.

2. To arrange for the gathering of figures as to cost of production in the industry, including conditions which were changing the cost of production.

3. To act with the Priority Committee of the War Industries Board which is establishing principles governing the distribution of materials in transportation and the order in which various products are to be produced and distributed.

4. New facilities are being created and there is great shifting of labor from one section of the country to another. War service committees could offer suggestions regarding the use of existing facilities or the employment of labor in districts of the country where needed after the war.

These committees should be ready at all times to meet with any of the Departments of the Government whenever their advice is desired, to discuss questions affecting the industry raised by the war needs of the Government. The committees might also, on their own initiative, present to the Government questions which call for consideration, and might from time to time suggest on behalf of the industry how orders and material can be distributed to the best advantage, and with the least disturbance to existing or prospective conditions.

### Industrial Cooperation Big War Need

Of far-reaching effect to manufacturers of this country is the following recommendation recently made by the Council of National Defense:

"Every effort that this country is capable of making should be applied to bring the war to a speedy and successful conclusion. The resources of the country in a general way may be said to consist of men, money and material, and during the period of the war any new enterprise or undertaking should be tried and justified by asking whether the men, money and material so applied best contribute in this way to the winning of the war.

"New enterprises, which are not fundamental to the efficient operation of the country's necessary activities, should not be undertaken. This will not result adversely upon business or conditions of employment because every man and every resource will be needed during the war."

There is no uncertainty or ambiguity about this statement. Every manufacturer, who wants to help win the war, has now an acid test to apply to any new enterprise or undertaking.

# The Rubber Trade and the Liberty Loan

### Sterling Liberty Loan Sign

That the resources of the rubber industry were behind the Government in its recent Liberty Loan campaign was proved by the large number of rubber manufacturers who bought bonds and donated their time and advertising space for the loan.

The Sterling Tire Corp., Rutherford, N. J., had painted and donated one of their sign-boards on one of the most prominent corners of New York City, Fifty-seventh street and Broadway. The sign, painted in red, white and blue with

FISK LIBERTY LOAN SIGN BOARD

the wording "The plain duty of every American—Buy a Liberty Bond," was atop one of the largest buildings and attracted the attention of everybody passing the corner.

At night the sign was brilliantly illuminated showing vividly against the darkened skies. This act on the part of a well-known tire company was a practical demonstration of its patriotism and showed the spirit which is dominating the entire industry.

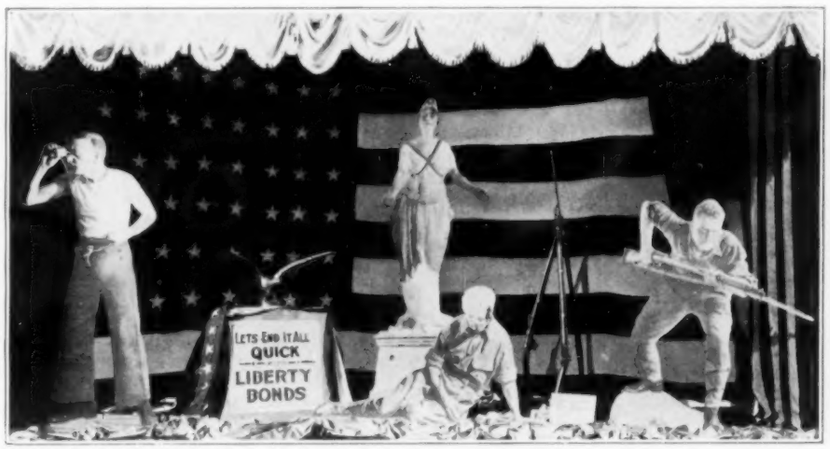
### Trade Subscriptions in New York

Announcement was recently made of the final ranking of the various trades in the Liberty Loan subscriptions in the New York Federal Reserve District comprising the five boroughs of New York City. The rubber industry ranked sixteenth with subscriptions amounting to $5,554,670. The campaign was conducted by a special sales committee.

### Goodrich Liberty Loan Window Displays

*(Special Akron Correspondence)*

Besides subscribing approximately one fifth of Akron's quota to the Liberty Loan, officials and employes of the B. F. Goodrich Rubber Co. installed several attractive window displays in local stores to stimulate bond purchases. So striking were the illustrations that crowds congregated in front of the windows to scan the characters portrayed. Much of the success of the Akron campaign was attributed to the impression made by these "windows."




GOODRICH LIBERTY LOAN WINDOW DISPLAY IN AKRON

### Rubber Trade in Parade

The Liberty Loan parade in New York City brought out many novel floats representing various industries and among those which the tire trade contributed were several by the American Hard Rubber Co., and the Mulford-Haas Co. of Brooklyn, Firestone and Ford distributors.

The float of the American Hard Rubber Co., besides having appropriate banners calling attention to the loan, showed the many articles, which they are making of hard rubber. Among them were hard rubber pails, battery jars, piping and a large model of an acid pump made entirely of hard rubber.

The various floats of the Mulford-Haas Co. included many Ford cars in various styles decorated with banners; and also a car filled in the center with Firestone tires arranged in the form of a pyramid.

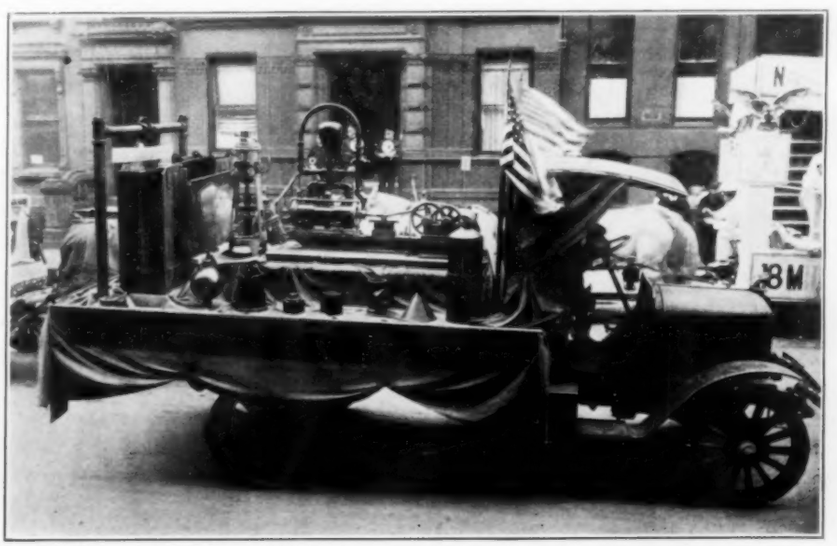
### Fisk Employes Purchase Bonds

The purchase of Liberty Bonds by 97 per cent of the employes of the Fisk Rubber Co., Chicopee Falls, Mass., is a display of patriotism which set a high mark for communities and industrials all over the country.

The seven day drive, in which this record was made, closed with a total subscription by the Fisk employes of $333,200. This averages a $65.07 subscription for each of the 5,121 subscribers.

One other feature of the Fisk campaign which served to stimulate and maintain the interest was a large billboard, 24 by 8 ft., which showed the daily percentage standings of the various divisions. This developed rivalry and spurred the men to do their best for Uncle Sam. The gross amount of the subscriptions day by day were recorded on a clock surmounting the billboard. The first clock with its capacity of only $200,000 was unable to carry the load longer than the first twenty-four hours, and another clock with a maximum capacity of $350,000 was hastily erected in its place.

SIGN DONATED BY STERLING TIRE CORP.



FLOAT OF AMERICAN HARD RUBBER

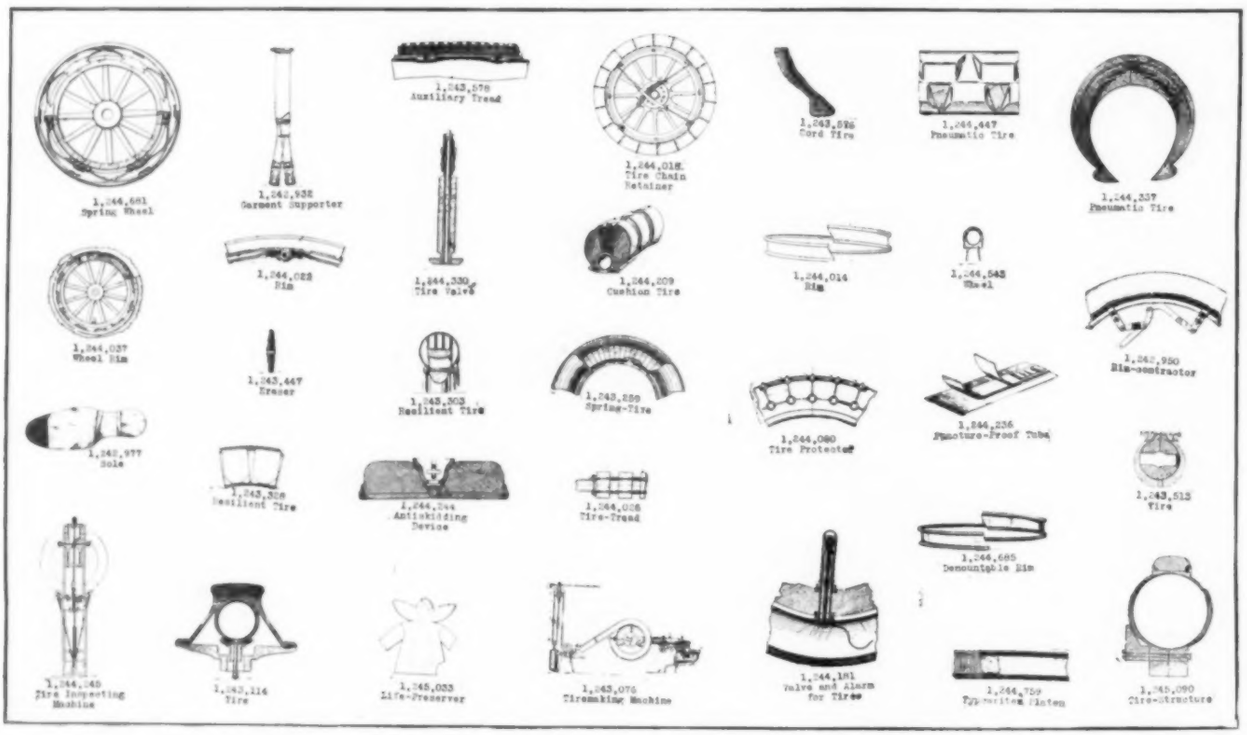
## American Rubber Patents

ISSUED OCTOBER 16, 1917

1,242,932—To Arthur Frankenstein, New York. Garment supporter.
1,242,977—To Raymond B. Price, New York. Sole for boots and shoes.
1,243,076—To Franklin B. Kremer, Carlsbadt, N. Y. Tiremaking machine.
1,243,114—To Emmett A. Saunders, Mishawaka, Ind. Tire.
1,243,259—To Joselph F. Carroll, Lakewood, Ohio. Reinforced spring-tire.
1,243,328—To Theodore Thomas Miller, West Suffield, Conn. Resilient tire.
1,243,447—To Weldon Roberts, Montclair, N. J. Eraser.
1,243,503—To William A. Frye, Forrest H. Chinn and Richard F. Bennett, Coffeyville, Kans.; assignors of one-fourth interest to Neil A. Cook, Coffeyville, Kans. Resilient tire.
1,244,244—To Andrew L. Riker, Fairfield, Conn.; assignor to the Locomobile Co. of America, Bridgeport, Conn. Anti-skidding device.
1,244,245—To William H. Robertson, Rockford, Ill. Tire inspecting machine.
1,244,330—To Edward E. Holt, Chicago, Ill. Tire valve.
1,244,337—To Charles A. Johnson, Waycross, Ga. Pneumatic tire.
1,244,347—To William G. Lindsay, Caldwell, N. Y.; assignor to the Celluloid Co., New York. Process for making acety-cellulose plastics and solvents thereof.
1,244,417—To Frank Brosman, Des Moines, Ia. Tire carrier.
1,244,447—To John Charles Varker, London, Eng. Pneumatic tire.

ISSUED OCTOBER 30, 1917

1,244,543—To Robert W. Pringle, Gatooma, Southern Rhodesia, South Africa. Wheel.
1,244,681—To Otto G. Worsley, Aurora, Ill. Spring wheel.




1,243,513—To Reuben Grubb, Philadelphia, Pa. Tire.
1,243,515—To Guy C. Hanna, Plainfield, Ind. Pneumatically-tired wheel.
1,243,576—To Charles L. Archer, Minneapolis, Minn. Cord tire.
1,243,578—To Emile Bardelle, New York. Auxiliary tread for tires.
1,243,303—To Jesse B. Jones, Arcata, Cal. Resilient tire.
1,242,950—To Edward Knauss, New York; assignor, by direct and reserve assignments, to the K. P. Manufacturing Co., Inc., of New York.

ISSUED OCTOBER 23, 1917

1,244,014—To Erle King Baker, Chicago, Ill.; assignor to Universal Rim Co., Chicago, Ill. Self-aligning transplit rim.
1,244,018—To Joseph T. Benranek, Mount Pleasant, Pa. Tire chain retainer.
1,244,022—To William N. Booth, Detroit, Mich.; assignor to Kelsey Wheel Co., Detroit, Mich. Straight-side demountable rim.
1,244,026—To Robert M. Callaway, Monnett, Mo. Tire-tread.
1,244,037—To Antonio De Rosa, Brooklyn, N. Y. Vehicle wheel rim.
1,244,062—To Nora McLaughlin, Seattle, Wash. Composition for water-proofing and preserving leather.
1,244,080—To Theodore J. Reed, Kansas City, Mo. Non-skid tire protector.
1,244,181—To Alfred A. Dennis, Grand Rapids, Mich.; assignor of one-half interest to Henry G. Krekel, Grand Rapids, Mich. Valve and alarm for tires.
1,244,209—To Francis Hickman, Boundbrook, N. J.; assignor to Boundbrook Oil-Less Bearing Co., Boundbrook, N. J. Cushion tire.
1,244,236—To Walter S. Oberfelder, Chicago, Ill. Puncture-proof tube and process of producing same.
1,244,685—To Erle King Baker, Chicago, Ill.; assignor Universal Rim Co., Chicago, Ill. Transplit demountable rim.
1,244,759—To William Redford Mulock, Winnipeg, Manitoba, Canada. Platen for type-writing machines.
1,245,053—To Samuel Lester Ross, Lockport, N. Y.; assignor of one-third interest to Joseph Rotondo, Lockport, N. Y. Life preserver.
1,245,090—To Peter M. Devenis, Waterbury, Conn. Tire structure.

## Recent Incorporations

Pilot Tire & Rubber Co., Rochester, N. Y.; capital, $50,000; to manufacture tires and rubber products; incorporators: F. E. Brown, J. M. Johnson and A. L. Dunton, all of Rochester.

Improved Rubber Co., Bayonne, N. J.; capital, $100,000.

Tropical Rubber Co., Wilmington, Del.; capital, $400,000; to manufacture rubber tires; incorporators: C. L. Rimlinger, M. M. Clancy and C. M. Egner, all of Wilmington.

J. W. P. Tire Co., Dover, Del.; capital increased from $300,000 to $1,000,000.

Aconite Rubber Corp., Wilmington, Del.; capital, $5,000,000; incorporators: F. D. Buck, M. L. Hortyn and K. E. Longfield.

Yardville Rubber Specialty Co., Yardville, N. J.; capital, $10,000; to manufacture rubber goods; capital, $10,000.

Rubber Insulated Metals Corp., Wilmington, Del.; capital, $500,000; incorporators: C. I. Rimlinger, M. M. Clancy and Clement M. Egner.

The Auburn Vulcanizing & Storage Battery Co., 18 Clark street, Auburn, N. Y., has added Prest-O-Lite storage batteries to its line.

## News of the Dealers

R. B. Tire Shop, specializing in retreads, has opened at 1049 South Main street, Los Angeles, Cal.

The Doughty Tire Co. has opened a new store in Providence, R. I.

The Cleveland Tire & Rubber Co., 309 North Fifteenth street, Philadelphia, Pa., of which Albert Hultzhizer is general manager, has taken the agency for Arcadia tires, manufactured by the New Jersey Car Spring & Rubber Co., Jersey City, N. J.

The Bohling-Beale Co., a newly established concern in Hammond, Iowa, will carry a complete line of accessories, parts, oils and tires for Ford cars.

The East End Tire Co. has opened salesroms at 5901 Penn Ave., Pittsburgh, Pa., under the direction of H. B. Jackson. The concern deal in Tyrian and used Goodyear tires.

The New Evanston Tire & Vulcanizing Shop is now opened for business at 1946 West Railroad ave., Evanston, Illinois.

Werthmuller Tire Service Co., Springfield, Mo., has purchased the business of the Rubber Tire Supply Co., 420 St. Louis street, and will move to that address.

Hughes Rubber & Supply Co. has opened a store at 815 South Spring street, Los Angeles, Cal.

J. B. Harris, distributor of National and Paige cars at Springfield, Ill., is opening a spacious new salesroom and tire house at 315-317 Washington street.

C. D. Stokes has opened a branch salesrom and vulcanizing plant at 512 Northwestern avenue, Los Angeles, Cal.

# Market for Manufactured Rubber Goods

NEW YORK, November 9, 1917.

The problems of labor and fuel shortage are becoming of serious concern to rubber manufacturers. A survey is being conducted by the Fuel Administrator of the Federal Government to classify industries as to their importance to the nation with a view to curtailing non-essential output. Recent developments indicate that this principle will also be applied to man power and will release many thousands for war work. To what extent this may affect the rubber industry is still a matter of conjecture.

The change in the war outlook has caused some changes in the markets for manufactured rubber goods. That a long war is still ahead of us appears inevitable. This implies an early call for more troops. That the Government is looking forward to this is evidenced by the heavy purchases being made by its various Departments. The Government is actually buying certain lines of goods for deliveries running to the end of next year.

Some jobbers, who are informed as to what the Government is doing, have been placing large orders for civilian purposes, but merchants in general have not been impressed by the developments of the international situation. When it becomes known to what extent troops are to be called, there are likely to be many rush orders for rubber goods for civilian needs.

### *MECHANICAL GOODS*

With future deliveries very uncertain, owing to the labor situation and Government needs, there has been marked activity in mechanical rubber goods. Many dealers have trusted to the large stocks they have been carrying for the last year and a half, but these are melting away and the realization that replacement is likely to be a slow process has made buyers busy. All business, of course, has its limitations and there are some manufacturers who find trade dull.

### *TIRES*

As yet there appears to be no marked tendency to curtail the use of automobiles. The tire business continues to be very satisfactory, but here also the future is uncertain. It is expected that many of the automobile plants of this country will soon be put to manufacturing munitions. This will naturally reduce the output of passenger cars, although no specific reduction of this production has been ordered by the Government. Truck production will increase because of the need of motor vehicles to assist the railroads in short-haul business.

There have been no changes in tire prices since our last report and manufacturers and distributors look for good winter business.

### *SOLES AND HEELS*

The sole and heel trade is showing improvement. The enormous Government purchases of Army shoes have caused a great drain on sole leather and the extent, for which composition soles are being substituted for leather ones, is growing every day. It is said that some shoe factories would have to shut down their factories were it not for the soles that are being supplied to them by the rubber industry.

### *FOOTWEAR*

Most rubber footwear factories have booked sufficient orders to keep them busy for many months. In most instances the supply of raw materials is causing no apprehension, but this is not true of the labor situation which is growing more complicated each day.

A conference was held on Nov. 6 at which representatives of fifteen rubber companies and the Shoe and Leather Committee of the Council of National Defence reached an agreement for distributing the contracts for 300,000 pairs of four-buckle cashmerette and rubber arctics. The difficulty hinged upon the supply of cashmerette, but the entire output of two factories were obtained. The rubber companies laid their cards on the table, told what their daily capacity is, and allotments were made to each, the delivery to begin at once and to be completed by January 5.

The large order means the taking of the entire capacity of each plant for the time being and the displacement of more profitable civilian business. Mr. Lawrence, Secretary of the Committee of Supplies, expressed pleasure because of the manner in which the rubber manufacturers have co-operated with the Government.

### *DRUGGISTS' SUNDRIES*

Most manufacturers of rubber sundries are busy with Government and civilian orders. Manufacturers depending on jobbing outlets find orders of small volume. Most jobbers want to go out of their fiscal year carrying lighter stocks than a year ago in order to keep their obligations low. On the whole, however, the placing season has been larger than it was a year ago in volume as well as in value.

# The Fabric Market

NEW YORK, November 9, 1917.

The raw cotton market continues to be erratic, alternating strong and weak, but taking a broad view it seems decidedly apparent that it is daily becoming more difficult to hold the present high lovel of prices, and still more difficult to force further advances. The crop has been killed several times by severe cold waves, but these reports have little or no effect on the market. The crop is not likely to be large, but this situation was taken care of by the sharp advances that occurred during the Summer and the last big bulge of over eight cents, and as far as the crop is concerned it is no longer a market factor. It has evidently been discounted, and probably overdiscounted.

Of much greater importance at present is the question whether the supply of raw cotton will be sufficient for the world's needs, or rather the world's taking possibilities. The answer to this question will decide the course of the market, and it cannot be given at present. The best that can be done is to watch the developments as to exports, domestic mill takings and the course of the war. At the present time all these factors point towards diminished trade-takings.

According to exchange statistics, exports are 300,000 bales less than last year, and takings by American mills are nearly 200,000 bales less. Consumption in Great Britain, owing to governmental regulations, will be considerably smaller than last year. France continues to limit imports to absolute necessities; Russia in her present situation is a negligible quantity and European neutrals will get little or no cotton under our embargo regulations. There remains Italy, where 90 per cent of the cotton industry lies in the Northern plains now threatened with coming entirely under German control. If the Austro-German drive is not arrested, exports of raw cotton to Italy will nearly cease.

The indications are that the value of cotton will soon decrease considerably.

ALEXANDRIA STATISTICS FOR THE WEEK ENDING OCTOBER 5, 1917

| | Arrivals. | Exports (Bales). | | Exports. | Total Stock. |
|---|---|---|---|---|---|
| | Cantars. | England. | Continent. | America. | Cantars. | Cantars. |
| This week | 206,730 | 5,266 | 675 | .... | 46,261 | 572,904 |
| Same week, 1916 | 258,069 | 10,583 | 1,841 | 760 | 101,069 | 477,821 |
| Same week, 1915 | 231,164 | 7,961 | 6,830 | 2,825 | 133,623 | 1,124,641 |
| Since Sept. 1, 1917 | 481,595 | 22,212 | 6,121 | .... | 216,691 | ..... |
| Same time, 1916 | 646,043 | 27,830 | 5,087 | 1,117 | 261,222 | ..... |
| Same time, 1915 | 634,228 | 25,305 | 19,754 | 7,648 | 399,917 | ..... |

### *EGYPTIAN COTTON*

According to advice from Alexandria, the futures market there is displaying a firm tone under the influence of the substantial and continued advance of the American markets. The daily arrivals of cotton from the interior and the shortage of tonnage are acting as checks on the price advance.

The Alexandria spot market has been active, and high prices were paid for Extra Sakellarides. Prices approximately followed futures and the demand from abroad was fair.

Reports concerning the new crop continue to be favorable. The crop is maturing much better than expected, although it has been much damaged, especially the second picking, by pink boll worm attacks.

With the recent improvements in conditions, it is now estimated that the final outturn of the crop will be about six million and a quarter cantars.

### *SEA ISLANDS*

Quite a bit of cotton is being moved on quotation basis in the Savannah market. The interior has become rather bullish as a result of this demand and it is difficult to buy any cotton under 73c., first cost port, for average Extra Choice.

### *YARNS*

The cotton yarn market is very steady, but there is little forward buying. Many dealers have dropped out of contracting on account of the high prices, and the market is left to the actual needs of the manufacturer.

### *FABRICS*

Developments pointing toward a prolonged war have caused some changes in the fabric situation. The requirements of the Government have greatly increased and there is goinp to be a steady elimination of various sorts of goods from the trade because the mills are finding work on other lines. Looms, which have previously been engaged in manufacturing fancy goods, are now being turned over to the production of necessities such as cloths for rubber proofing. The markets, generally speaking, are quiet, but prices hold firm.

### *TIRE FABRICS*

No one at present appears to fear a shortage of tire fabrics. The mill men believe that the Sea Island crop will supply a good portion of the country's needs

and that Egyptians will arrive before the stocks in this country are totally depleted. In the meantime tire fabric prices are very firm. The mills and their agents are receiving many inquiries, but the big contracts for next season have not been made.

### *HOSE AND BELTING FABRICS*

There is no change to report in the mechanical fabrics market. Prices are steady and mill men hope to be able to meet all needs. Looms, which had been diverted from mechanicals, have in a few instances been returned to this manufacture, other machines engaged in less necessary lines having been found and put to weaving the fabrics needed for the war.

### *DRILLS, OSNABURGS AND SHEETINGS*

Certain of the heavy sheeting mills and mills making drills and Osnaburgs are sold up for months to come. Many, who would not sell beyond January a month ago, are now sold ahead into March and April, many orders having been pressed by regular customers who feel that they cannot afford to take further chances on deliveries.

### *GARMENT CLOTH*

Cloths for proofing for civilian needs are steady, but business is not active, the demand being only of a moderate character. Contractors for the Army and Navy are taking large quantities of woolen materials.

### *BURLAPS*

The market for burlaps is very firm and few goods are being offered for spot sale. Reports from Calcutta and Dundee show that prices on those markets are tending higher. Local dealers report that they never have had so few goods for sale. The Government is said to be about to close an order for one or two million bags, and burlap distributers appear to be undisturbed by reports that bag manufacturers have been purchasing large quantities of heavy cotton goods to be used as substitutes.

### *NEW YORK QUOTATIONS*

TIRE FABRICS.

| | | |
|---|---|---|
| 17¼-ounce Sea Island, combed, | sq yd. | $1.60@1.70 |
| 17¼-ounce Egyptian, combed | | 1.40@1.45 |
| 17¼-ounce Egyptian, carded | | 1.30@1.35 |
| 17¼-ounce Peelers, carded | | 0.80@0.90 |
| 17¼-ounce Peelers, combed | | 1.00@1.05 |
| American Carded Staple, 12 to 20 yard, per lb. (pound basis) | | .55 |
| American Carded Staple, 8 to 10 yard, per lb. (pound basis) | | .52 |

MECHANICAL DUCKS

| | | |
|---|---|---|
| Hose (spot) | lb. | .52 |
| Hose (future) | | .51 |
| Belting (spot) | | .51 |
| Belting (future) | | .51 |

DUCKS

| | | |
|---|---|---|
| Single Filling (pound basis) | lb. | .48 |
| Double Filling (pound basis) | | .52 |

DRILLS

| | | |
|---|---|---|
| 37-inch 2.35-yard | yd. | .20 |
| 37-inch 2.75-yard | | .17½ |
| 37-inch 3.00-yard | | .16 |
| 37-inch 3.25-yard | | .15¼ |
| 37-inch 3.50-yard | | .14 |
| 37-inch 3.95-yard | | .13½ |
| 38-inch 2.00-yard Southern | lb. | .46 |
| 38-inch 2.00-yard Northern | | .48 |
| 40-inch 2.47-yard Southern | yd. | .18¼ |
| 40 inch 2.47-yard Northern | | .20 |
| 52-inch 1.90-yard Southern | | .26½ |
| 52-inch 1.90-yard Northern | | .27⅝ |
| 52-inch 1.95-yard Southern | | .26 |
| 52-inch 1.95-yard Northern | | .27 |
| 60-inch 1.52-yard Southern | | .32 |
| 60-inch 1.52-yard Northern | | .32¾ |

SHEETINGS

| | | |
|---|---|---|
| 40-inch 2.35-yard | yd. | .18 |
| 40-inch 2.50-yard | | .18 |
| 40-inch 2.85-yard | | .16 |
| 40-inch 3.00-yard | | .15½ |
| 40-inch 3.25-yard | | .14½ |
| 40-inch 3.60-yard | | .14¼ |
| 40-inch 3.75-yard | | .13 |
| 40-inch 4.25-yard | | .11½ |
| 38-inch Jacket Cloths | linear yd. | .18 |

TWILLS FOR PROOFING

| | | |
|---|---|---|
| 37-inch 2.85-yard | yd. | .17½ |
| 37-inch 2.35-yard | | .21½ |
| 37-inch 2.10-yard | | .24 |

COTTON STOCKINETTES (52-inch.)

| | | |
|---|---|---|
| E—11½-ounce | yd. | .75 |
| A—11 -ounce | | .50 |

BURLAPS

(Spot Carload lots.)

| | | |
|---|---|---|
| 40-inch 7½-ounce | per 100 yards | $13.75 |
| 40-inch 8 -ounce | | 13.75 |
| 40-inch 10 -ounce | | 17.50 |
| 40-inch 10½-ounce | | 17.75 |

# Chemicals and Compounding Materials

NEW YORK, November 8, 1917.

Trading in chemicals, so far as the rubber trade was concerned, was routine in volume. Price changes, however, were numerous, due to the fact that speculative interest in some of the more important commodities in the list was keen. During the interval corroders reduced prices for white lead, following another sharp reduction in the price of the metal. Caustic soda fluctuated violently, especially after it became known that the Government would commandeer a large supply. Benzol was reduced by leading producers, production being ample for current needs. Aniline oil opened easy but later advanced on improved buying. There was no change in zincs, sulphur, antimony sulphurets and barytes. Turpentine, rosin petroleum products and dry colors ruled firm. Under the division for acids interest centered in the advance in phenol, nitric and sulphuric. Shellac was easier on augmented stocks

### *ANTIMONY SULPHURETS*

Further weakness in the metal failed to bring out any material change in sulphurets. Most producers here seem to be well sold up and with the imported article in moderate supply prices held on the basis of 25 @ 26c for the red, 28 @ 30c for the golden and at 45 @ 48c for the crimson, as to brand, etc. Antimony closed at 14 @ 14½c per pound.

### *BENZOL*

Sales of round lots of pure benzol for immediate and nearby delivery were reported at 45c per gallon, f. o. b. point of shipment. The market was unsettled on freer offerings and the closing price represents a drop of 5c for the interval.

### *ANILINE OIL*

There were sellers of aniline oil for spot and nearby delivery at 27 to 28c per pound, drums extra. The market was quiet, but prices closed firm.

### *CAUSTIC SODA*

The Government has commandeered a round lot of caustic soda at a fixed price. This had a tendency to stabilize prices after the market went off sharply to 7¾c per pound. Towards the close sellers generally were asking on the basis of 8 @ 8½c per pound for spot material, and from 6¾ @ 7c for next year's delivery. Large producers are practically sold up over the first half of 1918 and the market now is largely controlled by second-hands.

### *LEAD PIGMENTS*

Leading interests lowered the price of pig lead to 6¼c per pound, establishing a new low record for this movement. This brought out an easier market for the pigments. Standard dry write lead closed at 9c per pound, round-lot basis, a drop of 1c from the previous basis. The sublimed was lowered to 8½c per pound. Red lead closed at 10 @ 10½c per pound. Litharge was reduced to 9½ @ 10c. Lithopone closed unchanged. Orange mineral also held on an even basis. The demand for the lead pigments was quiet.

### *SULPHUR*

Refined sulphur is moving freely on old contracts, but new business is rather inactive. Refiners quote on the basis of $3.85 @ $4.40 per 100-pounds for the flour, in barrels, the inside figure obtaining for car-lots. The undertone of the market is firm.

### *ZINC PIGMENTS*

An easier market obtained for spelter and zinc ore, but producers quote the market for pigments unchanged. American process zinc oxide is holding at 10¼ @ 10½c per pound, contract. French zinc is holding at 14 @ 15c, on contract.

### *Prices Current for Chemicals, Fillers, Colors, etc.*

| | | | | |
|---|---|---|---|---|
| Acetone | lb. | .35 | @ | .36 |
| Acids, Acetic, 28% | lb. | .06 | @ | .06½ |
| Carbolic, C. P. | lb. | .52½ | @ | .53 |
| **Cresylic, 95%** | **gal.** | **1.05** | **@** | **1.10** |
| Muriatic, 20 deg. | lb. | .02 | @ | .02¼ |
| Muriatic, 22 deg. | lb. | .02½ | @ | .02⅝ |
| Nitric, 38 deg. | lb. | .08¾ | @ | .09 |
| Nitric, 40 deg. | lb. | .09½ | @ | .09¾ |
| Sulphuric, 60 deg. | lb. | .01½ | @ | .01¾ |
| Tartaric, crystals | lb. | .78½ | @ | — |
| Aluminum Flake | ton | 22.00 | @ | 24.00 |
| Aniline oil | lb. | .27 | @ | .29 |
| Antimony, metal, spot | lb. | 14.00 | @ | 15.00 |
| **Oxide** | **lb.** | **.16** | **@** | **.18** |
| Sulphuret, red | lb. | .25 | @ | .26 |
| Sulphuret, golden | lb. | .28 | @ | .30 |
| Sulphuret, crimson | lb. | .45 | @ | .48 |
| Asbestos | ton | 40.00 | @ | 60.00 |
| **Asphaltum, Egyptian** | **lb.** | **.20** | **@** | **.25** |
| Domestic | ton | 18.00 | @ | 25.00 |
| Barium sulphate, technical | lb. | .04¼ | @ | .04¾ |
| **Chloride** | **lb.** | **.05** | **@** | **.05½** |
| Barytes, prime white imported | ton | 38.00 | @ | 40.00 |
| white, domestic | ton | 28.00 | @ | 32.00 |
| off color, domestic | ton | 18.00 | @ | 22.00 |
| Benzol, pure | gal. | .45 | @ | .50 |
| Beta-naphthal, sublimed | lb. | .85 | @ | .90 |
| unsublimed | lb. | .62½ | @ | .65 |
| Blacks, Drop | lb. | .07 | @ | .12 |
| Ivory | lb. | .16 | @ | .30 |
| Carbon gas | lb. | .27 | @ | .35 |
| Lampblack R. M. | lb. | .04½ | @ | .06 |
| Mineral blacks | ton | 24.00 | @ | 28.00 |
| Blues, Prussian | lb. | .65 | @ | 1.35 |
| Soluble (potash) | lb. | 1.45 | @ | 1.75 |
| Ultramarine | lb. | .18 | @ | .35 |
| Browns, Umber, Turkey, burnt, powdered | lb. | .04 | @ | .05 |
| **American, burnt** | **lb.** | **.03** | **@** | **.03½** |
| Cadmium sulphide, yellow | lb. | 2.25 | @ | 2.50 |
| Carbon bisulphide, bulk | lb. | .07½ | @ | .08 |
| tetrachloride, drums | lb. | .16½ | @ | .17 |
| Caustic Soda, 76@78% | lb. | .08 | @ | .08½ |
| **Chalk, precipitated, light** | **lb.** | **.04½** | **@** | **.04¾** |
| heavy | lb. | .03¾ | @ | .04¼ |
| China clay, domestic | ton | 18.00 | @ | 22.00 |
| imported | ton | 25.00 | @ | 35.00 |
| Fossil flour | lb. | .06 | @ | .10 |
| Gilsonite | ton | 40.00 | @ | 44.00 |
| Glue, extra white | lb. | *.28 | @ | .38 |
| medium | lb. | *.25 | @ | .28 |
| low grade | | *.22 | @ | .25 |
| Glycerine, C. P. (drums) | lb. | .70 | @ | .71 |
| Graphite, flake (bbl.) | lb. | .25 | @ | .— |
| powdered (bbl.) | lb. | .10 | @ | .— |
| Green, chrome, R. M. | lb. | .12 | @ | .30 |
| Ground glass (fine) | lb. | .02½ | @ | — |
| Hexamethylene | lb. | .75 | @ | .80 |
| Infusorial earth, powd'd. | ton | 60.00 | @ | — |
| bolted | ton | 70.00 | @ | — |
| Iron oxide, red, reduced grades | lb. | .04 | @ | .05 |
| **red, pure, bright** | **lb.** | **.12** | **@** | **.14** |
| Lead, red oxide of | lb. | .10 | @ | .10½ |
| sublimed blue | lb. | .08½ | @ | .09 |
| white, basic carb. | lb. | .09 | @ | .09½ |
| white basic sulph. | lb. | .08½ | @ | .09 |
| Lime flour | lb. | .01½ | @ | .01¾ |
| Litharge | lb. | .09½ | @ | .10 |
| English | lb. | *.12 | @ | .13 |
| sublimed | lb. | .09¼ | @ | .09¾ |
| Lithopone, domestic | lb. | .06½ | @ | .07 |
| Magnesia, carbonate | lb. | .11 | @ | .13 |

| | | | |
|---|---|---|---|
| calcined, heavy | lb. | .10 | @ .10½ |
| calcined, light | lb. | .70 | @ .75 |
| Magnesite, calcined, pwd. | ton | 65.00 | @ 70.00 |
| Mica, powdered | lb. | .03¾ | @ .05 |
| Mineral rubber (asphaltum base) | ton | 40.00 | @ 60.00 |
| Naphtha, motor gasoline, (steel bbls.) | gal. | .24 | @ — |
| 68 @ 70 degrees (steel bbls.) | gal. | .30 | @ — |
| 70 @ 72 degrees (steel bbls.) | gal. | .31 | @ — |
| 73 @ 76 degrees (steel bbls.) | gal. | .33 | @ — |
| machine (wood bbls.) | gal. | .41 | @ — |
| Oil corn, crude | cwt. | 17.75 | @ 18.00 |
| corn, refined | cwt. | 20.61 | @ 20.86 |
| linseed (bbl.) | gal. | 1.15 | @ 1.17 |
| palm, Lagos | lb. | .21 | @ .22 |
| pine, yellow | gal. | .54 | @ .56 |
| rapeseed, refined | gal. | 1.60 | @ 1.65 |
| rapeseed, blown | gal. | 1.70 | @ 1.75 |
| rosin, first rectified | gal. | .41 | @ .42 |
| tar (commercial) | gal. | .22 | @ .24 |
| Orange mineral, American | lb. | .13 | @ .13½ |
| imported | lb. | *.15 | @ .20 |
| Petrolatum, bbls., amber | lb. | .04¾ | @ .05 |
| pale yellow | lb. | .05 | @ .05⅛ |
| Pine, tar | bbl. | 14.25 | @ 14.75 |
| Pitch | bbl. | 4.00 | @ 4.75 |
| Plaster of paris | bbl. | 2.00 | @ 2.50 |
| Red, Tuscan | lb. | .25 | @ .30 |
| Indian (reduced) | lb. | .06 | @ .08 |
| Standard | lb. | .08 | @ .11 |
| Rosin (common to good), @ 280 lbs. | bbl. | 6.60 | @ 6.80 |
| Rotten stone, powdered | lb. | .02¾ | @ .04¼ |
| Rubber substitute, Black | lb. | .11 | @ .15 |
| white | lb. | .15 | @ .18 |
| brown | lb. | .14 | @ .16 |
| Shellac, fine orange | lb. | .52 | @ .54 |
| T. N. | lb. | .48 | @ ... |
| Bleached, ordinary | lb. | .46 | @ ... |
| Bleached, bone dry | lb. | .56 | @ ... |
| Silex (silica) | ton | 24.00 | @ 34.00 |
| Soapstone, powdered | ton | 16.00 | @ 22.00 |
| Starch, corn, powdered | lb. | .06½ | @ .06¾ |
| Sulphur, crude | ton | 45.00 | @ 50.00 |
| refined, flour, per 100-pounds, in bbls. | | 3.85 | @ 4.40 |
| roll | | 3.70 | @ 4.15 |
| commercial | | 3.35 | @ 3.65 |
| Talc, American | ton | 12.00 | @ 16.00 |
| French | ton | 22.00 | @ 30.00 |
| Toluol, pure, in drums | gal. | *1.75 | @ 2.00 |
| Tripolite earth | ton | 60.00 | @ 65.00 |
| Turpentine, pure gum—spirits | gal. | .52½ | @ .53 |
| wood | gal. | .48 | @ .51 |
| Venice, artificial | gal. | .12 | @ .13 |
| Vermilion, English | lb. | 1.90 | @ 2.10 |
| Wax, beeswax, crude yel. | lb. | .37 | @ .38 |
| ceresin, white | lb. | .17 | @ .19 |
| carnauba, No. 3 | lb. | .44 | @ .45 |
| Montan | lb. | *.35 | @ .40 |
| oxokerite, black | lb. | .75 | @ .80 |
| oxokerite, green | lb. | *.85 | @ .95 |
| Paraffin, refined, 118/120 M.P. (bbls.) | lb. | .11 | @ .11¼ |
| 123/125 M.P. | lb. | .11½ | @ .11¾ |
| 128/130 M.P. | lb. | .11¾ | @ .12 |
| 133/136 M.P. | lb. | .12¾ | @ .13 |
| Crude, 177/118 M.P. | lb. | .08 | @ .08½ |
| 124/126 M.P. | lb. | .09 | @ .09½ |
| Whiting, commercial | cwt. | .95 | @ 1.10 |
| Paris, white, American | cwt. | 1.25 | @ — |
| English cliffstone | cwt. | 1.50 | @ — |
| Yellow chrome | lb. | .24 | @ .27 |
| Zinc oxide, American process, horsehead brand | lb. | †.10¼ | @ .10½ |
| selected | lb. | †.10¾ | @ .11 |
| "XX red" | lb. | †.10¼ | @ .10½ |
| French process, green seal | lb. | †.14½ | @ .14¾ |
| red seal | lb. | †.14 | @ .14¼ |
| white seal | lb. | †.15 | @ .15⅛ |
| Zinc substitutes | ton | 30.00 | @ 35.00 |
| Zinc, sulphide, pure | lb. | *.07½ | @ .08 |

†Contract prices. *Nominal.

# The Crude Rubber Market

NEW YORK, November 8, 1917.

The importations of crude rubber again were heavy and, with no appreciable increase in the demand, prices for practically all descriptions established new low records for this movement. Contrasted with prices of a fortnight ago the leading grades suffered declines of 2 to 3c per pound. Early this week a full cargo of plantation rubber arrived from Singapore. The bulk of this shipment was consigned to manufacturers, yet enough rubber was offering in the open market to create a feeling of unsettlement. The unexpected turn taken by events in Russia was not without influence.

It is the opinion of importers that, while actual consumption of crude rubber has been increasing steadily, the available supply, under present conditions is sufficient to hold prices at a fairly low level. All efforts to bull the market on the unfavorable shipping situation, etc., have resulted in complete failure, especially since the published statistics giving import data proved that the movement of rubber into this country is heavy. During the eight months ending with August the imports of crude rubber amounted to 283,178,556 pounds, which compares with 183,915,015 pounds for the corresponding period a year ago. These figures do not include balata, guayule, gutta percha and gutta jelutong. Trade authorities predict that the total production of plantation rubber this year will amount to more than 200,000 tons, which compares with approximately 150,000 tons in 1916.

The London market has eased off of late in the absence of important trading. The reported fewer sinkings by submarines had a tendency to ease the situation. First latex pale crepe closed today at 31¾*d.*, a drop of 1*d.* for the interval. Smoked sheets closed at 29¾*d.* prompt shipment.

First latex pale crepe sold as high as 64½c per pound about two weeks ago, but today there were sellers at 62c, with no buyers. First latex for nearby delivery was available on the same basis as spot rubber, but on January-March deliveries most sellers were asking from 62½ @ 63c. Operators were not anxious to push trading in distant futures. Smoked sheets closed at 61c spot and 61½c for nearby, being about 1½c lower contrasted with a fortnight ago.

Brazilian rubber was under slight pressure, following the arrival of several large shipments from the South American republic. Para up-river fine closed at 62 @ 62½c per pound, spot and nearby, a drop of 2½c for the period under review. Up-river coarse went off slightly, closing at 42 @42½c, with Cameta at 27½c per pound. Caucho ball was more or less nominal at 38 @ 38½c.

Central American descriptions showed little change. Prime Corinto was held at 39 @ 40c per pound, with Esmeralda at 38½c. Guayule was steady under moderate offerings and towards the close 30c represented the market price. East Indian gums were higher, due to the upward tendency of freights. Pontianak closed at 12 @ 12¼c per pound, with Palembang at 12¾ @ 13c per pound.

| | Spot. | Nov-Dec. | Jan-Mar. |
|---|---|---|---|
| Para—Up-river fine lb. | 62 | 62 | .. |
| Up-river medium | 56 | 56 | .. |
| Up-river coarse | 42 | 41½ | .. |
| Caucho ball | 38½ | 38 | .. |
| Islands fine | 46 | 46 | .. |
| Islands coarse | 27 | 27 | .. |
| Cameta | 27½ | 27½ | .. |
| Madeira fine | 65 | .. | .. |
| Ceylons-Smoked sheets, ribbed | 62 | 62 | 62½ |
| Smokers sheets, plain | 60 | 60 | 60½ |
| First latex pale crepe | 61 | 61 | 61½ |
| Amber crepe | 59 | 59 | 59 |
| Clean brown crepe | 56½ | 56½ | 56½ |
| Centrals—Corinto, prime | 39 | 39 | .. |
| Esmeralda, prime | 38 | 38 | .. |
| Mexican scrap | 38 | 38 | .. |
| Balata, sheets | 52 | 52 | .. |
| Balata, block | 49 | 49 | .. |
| Guayule | 30 | 30 | .. |
| Africans—Rio Nunez, string | *62 | .. | .. |
| Massai, red | 48 | 48 | .. |
| East Indian Pontianak | 12¾ | 12½ | .. |
| Palembang | 12¼ | 12¼ | .. |

* Nominal.

# Scrap Rubber

NEW YORK, November 9, 1917.

There is a moderate demand for old rubber boots and shoes, for which full prices are being obtained. Otherwise, the scrap rubber trade is slow and the general tone of the market easy.

The following prices were paid for scrap rubber delivered at the reclaiming mill:

| | |
|---|---|
| Boots and shoes | @ .. |
| Arctics, trimmed | 7½ @ .. |
| Arctics, untrimmed | 7 @ .. |
| Tires—Automobile | 6¼ @ .. |
| Bicycles, pneumatic | 5⅝ @ .. |
| Mixed Hose | 2½ @ .. |
| Air brake | 6¼ @ .. |
| Inner tubes, No. 1 | 23 @ .. |
| Inner tubes, No. 2 | 12½ @ .. |
| Red | 12½ @ .. |

## News of the Dealers

J. W. Capek & Co., Tacoma, Wash., have been appointed distributers of Goodyear solid truck tires.

Jack Milliken has sold his automobile and tire business at River Falls, Wis., to Henry Richards, who will now assume control.

The Florida Tire & Supply Co., has opened a salesroom in Jacksonville, Fla.

The Worcester Tire & Rubber Co. has opened automobile salesrooms at 14 Harding St., Worcester, Mass. The company deals in factory seconds and overproductions of leading tires. Nathan Snyder is president and L. M. Cahn vice-president.

Kolman Tire Co., Savannah, Ga., will open a branch office at Greenville, S. C. The company will handle cut price tires, tubes and accessories. M. R. Clineberg will be the manager.

G. L. Walker has opened a modern and complete vulcanizing and repair shop at Kemmer, Wyo.

V. K. Miller, Bottineau, N. Dak., has bought the tire repair shop of O. G. Corbin.

Tilman Jones, proprietor of the Jones Auto Tire Shop, has purchased the Ziler Garage on West Third St., Carthage, Mo., and will take possession immediately.

The St. Paul Rubber Co., St. Paul, Minn., has moved to its new quarters at Fourth and Wacouta streets. A. C. Kreiger is manager.

The Western Auto Supply Co. has opened a branch at the corner of Seventh and Main Streets, Tulsa, Okla. Kelly-Springfield tires will be handled and a free road service given night and day.

The Central Tire Co., San Antonio, Tex., has increased its capital from $12,000 to $25,000.

Hamburg Tire Repair Co., Hamburg, Iowa, has been started by F. M. Bennett of Council Bluffs, Ia.

A. J. Gunderson has opened a vulcanizing plant at New Hampton, Iowa.

J. R. Bolster has opened a service station at Bellingham, Wash., where he will also engage in vulcanizing work.

# TIRE NEWS

## Firestone Fleet Reaches New York

Five big White touring automobiles, manned by experts from the Firestone Tire & Rubber Co. of Akron, Ohio, drove into the City Hall Park, New York City, at 12.25 p. m., Friday, Nov. 2. A few minutes later, Mayor Mitchel's secretary, Theodore D. Rousseau, accompanied by President H. S. Firestone, picked their way through the crowd to greet the Firestone Co.'s test fleet No. 3 on its unique mission through the East, teaching tire economy.

The tour director of the fleet presented the Mayor's secretary with a letter from Mayor W. J. Laub of Akron, which commended the company's efforts to reduce the staggering tire waste of more than $100,000,000 annually. Mayor Mitchel's acknowledgment of this big public-spirited movement, which is an attempt to benefit all car owners and the nation alike, is the most prominent of many endorsements from men in public life who have witnessed the work of this modern caravan during their tour from Akron to New York City.

Although this movement to teach tire economy benefits the user of every tire alike, regardless of make, it will be promoted at the Firestone

T. D. Rousseau and H. S. Firestone

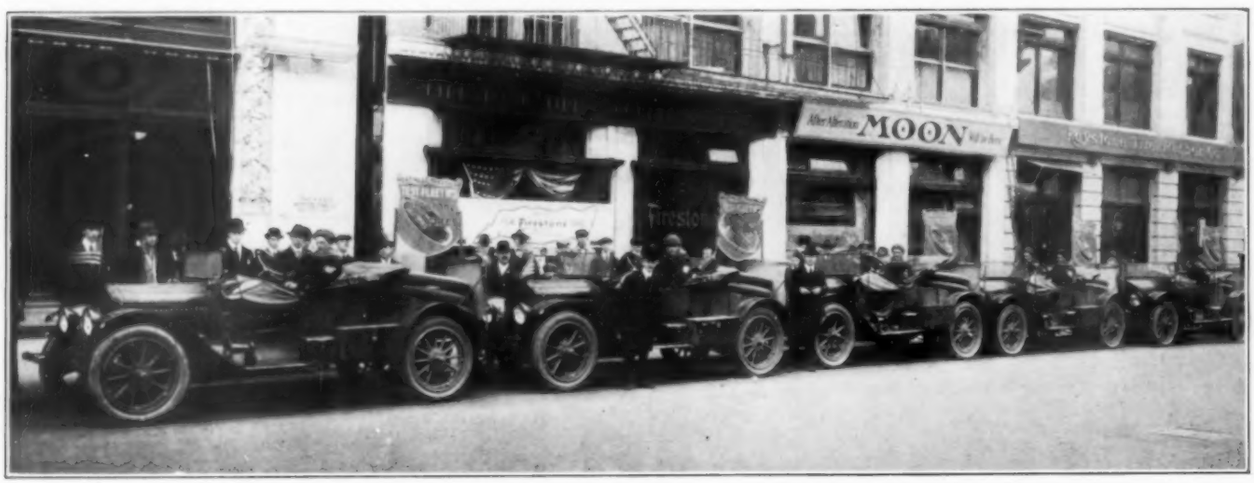
Co.'s expense as a part of its " bit " in teaching economy to the Nation. Its possibilities will be realized when it is known that the cost of tire abuse last year alone was $105,000,000, or about 5 per cent of the first Liberty Loan.

It was explained by these tire experts that one-third of the population of the United States is directly interested in the making, selling or use of tires. But the benefits of this movement go far beyond. The movement is grappling with a waste of $105,000,000 a year, a waste that can be stopped easily and quickly, and thereby pour into the channels of efficient use this immense amount of money.

Fleets of automobiles, whose complement consists of speakers, demonstrators, photographers and experts on tire construction, were assembled to travel in the various sections of the country. These fleets are obligated to stop in convenient downtown places, gather a crowd and briefly present tire economy arguments.

Fleet No. 3, upon its arrival in New York City, completed the first half of the 3,000-mile trip through the East. The cars, decorated with the characteristic shield of the Firestone Co., interested thousands of people at all points where they stopped to give this tire instruction and to distribute literature on the care of tires. During each stop, bulletins bearing records of the tires in service on these cars, photographs and general information, were displayed on the side of each car. Sections of tires in the various stages of wear were also available to car owners for their inspection.

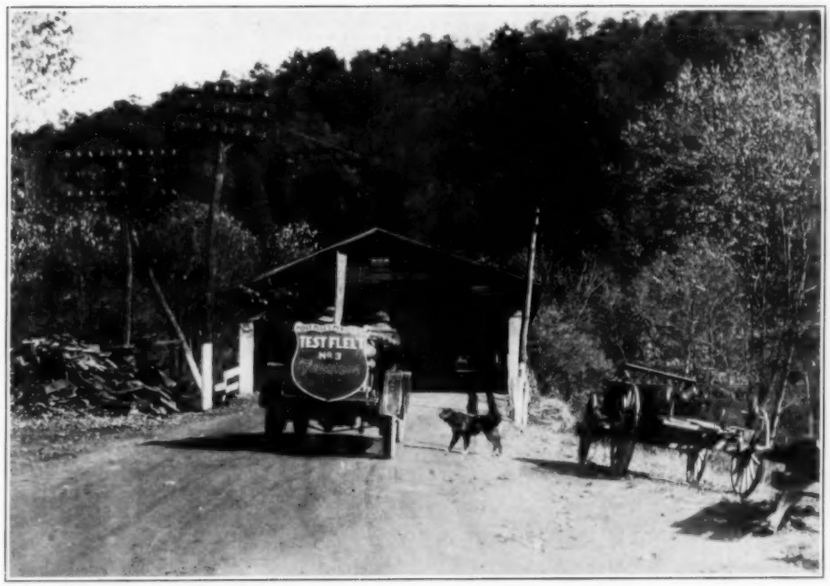
There is another commendable mo-




The Fleet of Five Cars in Front of New York Branch

tive in sending these fleets broadcast as explained by Tour-Director Hugh A. Fargo. It is the company's belief that a reliable tire test is to be secured only over the car owners' own roads in many states. The route for fleet No. 3 will take them as far as Boston. The return trip to the factory at Akron will be made through the Berkshire Mountains, Massachusetts, to Albany, then to Syracuse, Rochester and Buffalo, and through to Cleveland. A schedule of one hundred miles a day is maintained, in addition to calling upon the many dealers and branches en route.

Both cord and fabric tires, some of which have had several thousand miles previous to the trip, will have had a long and severe test when the cars finish this route. The tires and rims were officially sealed to the wheels when the cars left Akron. An interesting film story of the trip is being made which will soon be shown throughout the country.




On the Road Near Bedford, Pa.

## Kelly-Springfield's Electrical Sign

Several of the larger tire companies are taking advantage of the opportunities offered by New York's "White Way" to advertise their tires very prominently on Broadway. So many people come into the Metropolis daily that the claim is made that to capture New York by advertising is to capture the Nation.

Among the most prominent electrical displays ever flashed on Broadway is that of the Kelly-Springfield Tire Co. This company has had erected a huge sign 65 feet high by 70 feet wide.

The illustration shows the attractiveness of the display but a conception of its value is only to be obtained by watching it operate. The action is that the rings begin to expand from the center until the entire sign is one enormous mass of light, then all the globes in the reading matter go out, leaving the words "Kelly-Springfield Tires," in black against a bright background. After this the circles of lights begin to contract toward the center of the sign.

Kelly-Springfield's Large Electrical Display on Broadway

# News of Interest to the Tire Trade

*New Factory to Be Built by Superior—Mason Appoints Salesman in Indiana Territory—B. C. Dowse Forms Tire Company—Globe President on Conservation of Rubber—Polack Announces Changes*

### Superior Will Soon Build

The Superior Tire Co., Anderson, Ind., will soon start breaking ground for the erection of a new factory. The company, which is capitalized at $750,000, will erect a two-story concrete building with a floor space of 50,000 sq. ft. The plant will have a capacity of 500 tires daily. The officers are as follows: President, O. Hibner, former sales manager of the Knight Tire & Rubber Co., Canton, Ohio; Consulting Engineer, Charles A. Besaw, president of the Besaw Tire & Rubber Co.; Vice President W. I. O'Bryan of Cleveland, and the Secretary, W. W. Campbell of Toledo.

### New Mason Salesman

Lawrence Broering has recently been added to the Chicago branch of the Mason Tire & Rubber Co., Kent, Ohio. Mr. Broering will represent the Mason interests in Indiana.

He started his career in the tire business with the Goodyear Tire & Rubber Co., and rose to be assistant manager of the Indianapolis branch. Later he became manager for the Miller Rubber Co. in the same city. It was from this position that Mr. Broering joined the Mason forces. He is thirty-three years of age and was born in Cincinnati.

### New Tire Company

It is reported that B. C. Dowse, connected in the past with the G. & J. Tire Co., United States Rubber Co., and the Federal Rubber Manufacturing Co., has finally announced a part of his new manufacturing plan. Mr. Dowse has formed the Dowse Rubber Co. with an authorized capital stock of $2,500,000 and arrangements have practically been concluded to purchase two factories in the automobile field, manufacturing both motor car and bicycle tires and mechanical goods. One of the plants is in Chicago, which will be the home office of the Dowse Rubber Co.

### Would Conserve Rubber

H. B. James, president of the Globe Rubber Tire Manufacturing Co., Trenton, N. J., in a recent statement urged the conservation of rubber and cotton fabric as an important war measure. He said in part:

"The tremendous volume of cotton fabric and rubber that is being drafted for tents, uniforms, tires, war trucks, combat cars, ordnance cars, airplanes, hospital cars and surgical equipment strikes severely at the supplies available for passenger car purposes," he said. "The difference between a long service tire and a short service tire is not merely a matter of mileage, but is the difference between conservation and waste, and depends upon the compounding of the rubber and the pains and skill with which the tire is built."

### Marathon Man Leaves for War Duty

Stanley M. Cramer of the advertising department of the Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio, has gone to Camp Sherman, Chillicothe, Ohio, with the Akron contingent leaving Nov. 6. Mr. Cramer's office associates presented him with a sweater outfit on his departure.

### Mason Adds New Lines

The Mason Tire & Rubber Co., Kent, Ohio, has announced several changes and additions to the line of rubber articles which it will manufacture next year.

Early in 1918 the company will place on the market the Mason cord tire. This tire has been made up and is now being tested. Much interest centers on the tread design, which is to consist of an inverted "M," making a rugged and effective non-skid tread.

The company announced several months ago that it would manufacture fibre soles under the name of "Masola" and it is proposed to begin their manufacture as soon as the new buildings now under construction are completed.

Another addition is the manufacture of a semi-cured tread band to be used for the retreading of tires and which will be ready for the market within a few weeks.

Within the first two months of 1918 a full line of sundries will also be manufactured including hook-on and laced boots, blowout patches, tire plasters, reliners, tread gum, cementless patches, cushion gum, repair fabrics and cements.

There will be no radical changes in the lines now being manufactured, except that the Lattice non-skid tread and Ribbed tread molds are being recut to eliminate the high crown. This is expected to give the tires a greater wearing surface and to distribute the wear equally to all parts of the tires.

### Firestone 1917 Business

According to an estimate made by H. S. Firestone of the Firestone Tire & Rubber Co., Akron, Ohio, the company will do a $60,000,000 business this year. This will make an increase of over 100 per cent above the business done last year. Following is the business done for various periods of the company's history: 1904, $400,000; 1908, $1,000,000; 1910, $5,300,000; 1916, $37,000,000.

### Keystone Earnings for Fiscal Year

Announcement of its earnings during the fiscal year ending June 30, 1917, was recently made by The Keystone Tire & Rubber Co., New York. It earned 40 per cent on its outstanding $1,481,700 of common stock. Gross sales were $2,751,269 and net profits $594,020.

The Keystone Co. is rapidly building up a chain of agencies and at the present time has thirty-two in operation on a profit sharing basis.

### Lee Selling Co. to Change Name

So that it may be more closely identified with the parent company at Conshohocken, Pa., the Lee Tire Sales Co., Inc., is to change its business style. At a recent meeting of the stockholders a resolution was adopted by which the name will be Lee Tire & Rubber Co. of New York, Inc. In removing the company's sales offices from the factory to New York a salesroom has been opened at 236 West 54th Street.

### Quaker Plans Addition

The Quaker City Rubber Co., 629 Market street, Philadelphia, Pa., has filed plans for the erection of an addition to its plant at Comly and Milner streets, to cost about $5,000.

### Polack Changes

The Polack Tyre & Rubber Co., New York, announces the following changes in its sales organization:

James A. Harris, formerly Philadelphia branch manager, has been called to the New York territory to assist the metropolitan sales force.

T. J. Manning has been appointed manager of the Philadelphia branch. Mr. Manning has been engaged in the tire business for more than fifteen years and has been identified with one of the well known companies, which manufacture solid tires.

H. E. Heyder, formerly manager of the Brooklyn, N. Y., branch, has been appointed Western manager of Polack factory sales, with headquarters in Detroit. Mr. Heyder will give his entire time and attention to the needs of truck manufacturers and agents in the Middle Western territory.

Englert & Englert, at Grand Boulevard and Sixth avenue, Pittsburgh, Pa., are now distributors for Polack Truck tires in Pittsburgh, west of Altoona, and in the state of West Virginia. Englert & Englert are among the best known pneumatic tire distributors in that territory.

M. W. Conway, manager of the Polack factory at Bridgeport, Conn., has begun a tour of the larger cities where Polack branches are located, for the purpose of acquainting truck users with the information he has gained in many years of truck tire experience. Mr. Conway's services will be available in Boston for the next sixty days.

### New Tire Plant in Omaha

The Sprague Tire & Rubber Co. has been incorporated in Omaha, Neb., with a capital stock of $1,500,000. E. H. Sprague is president. It is claimed that the factory will be completed and in operation within a year.

A full line of tires and tubes will be marketed, but the company expects to specialize on "Sprague's Triangle Tread," a tire to which Mr. Sprague has devoted much attention.

### New York and Chicago Auto Shows

The drawing for booths at both the New York and Chicago Automobile shows took place recently in New York City and from present indications both exhibitions will be successful in spite of the fact that the number of manufacturers represented this year will be much smaller than last year.

The New York show will be held at the Grand Central Palace from Jan. 5 to 12. The number of exhibitors will be seventy-eight, of which seventy-two make gasolene cars; five, electric cars, and one, steamers, the latter, the Stanley steamer, being the only new exhibitor.

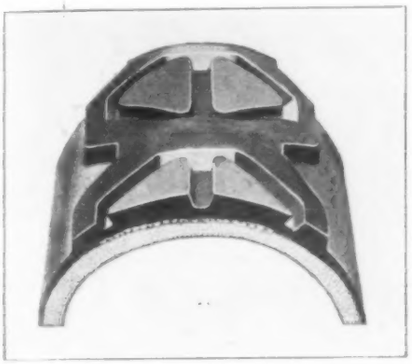
The Chicago show wil be held at the Colliseum and Armory from Jan. 26 to Feb. 2 and will, according to present figures, have eighty exhibitors, compared with ninety-four a year ago. Both shows, however, still have booths which have not been taken, giving late comers a chance to exhibit. Two rubber companies will have booths at this show, the Century-Plainfield Tire Co., Plainfield, N. J., and the Voorhees Rubber Manufacturing Co., Jersey City, N. J.

Both shows will have a greater display of accessories and parts than previously. Up to this time 108 members of the Motor and Accessories Manufacturers have been allotted spaces at the New York show. Other spaces, which will be taken by manufacturers not members of this association, will in all probability bring the total up to 300.

# Tire and Accessories Items

### The Mohawk-Keaton Tread

It is claimed that the "Mohawk-Keaton Non-Skid" is the only tire that will practically eliminate the use of chains in all seasons and retain its non-skid qualities for practically its full life in service.



MOHAWK-KEATON TREAD

Four features are claimed for this patented tread:

First, an automatic vacuum grip, with large, powerful suction depression, which grips firmly and releases without retarding effect because the length of the depression is such that it allows one edge at a time to roll free from the pavement instead of the whole depression pulling straight away.

Second, a pincher grip with the central groove and the parallel side grooves, the straight, square edges of which effectively check side slips. The pairs of flexible triangular portions are forced together by the weight of the car and thus effectively develop this pincher grip. This grip is automatically released as the tire rolls.

Third, a "traction scoop" grip, formed by side grooves, placed at an angle of 55 degrees, and the connecting cross groove. This scoop-shaped wall has square edges and extends across the entire width of the tread.

Fourth, an anchor grip formed by the 55 degree angle side ribs with square edges and which grips firmly when the tire rolls sideways in rounding corners. It is very effective in dirt, mud or sand.

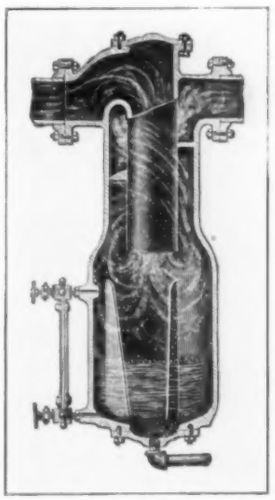
### Stratton Steam Separator

The Stratton Steam Separator, shown in the accompanying illustration, is manufactured by the Griscom-Russell Co., New York City, and is designed for the removal of water from steam. It is of particular value to rubber manufacturers for use on the steam inlets of vulcanizers.

Difficulty is often experienced in rubber vulcanizers on account of the moisture in steam. This moisture occupies valuable space, which should be filled with steam in order to secure maximum efficiency, and if water is deposited on the article which is being cured, it prevents the heat from reaching the article and therefore renders the vulcanization incomplete.

The Stratton separator utilizes centrifugal force as the means of separating the water from the steam. As the steam and water enter the separator, they are caused to pass through a helical path formed about a central core. The sudden change from a straight line flow to this helical path imparts a whirling motion to the steam and water. Water is 200 or 300 times heavier than steam and therefore does not turn corners as easily.

At any turn the centrifugal force throws the water against the wall forming the bend, while the steam makes the turn and goes on without the moisture.



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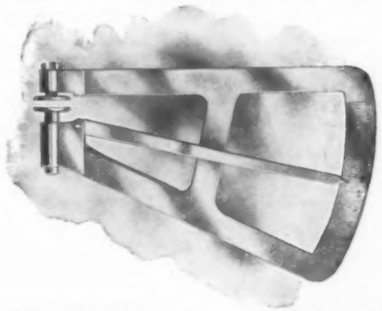

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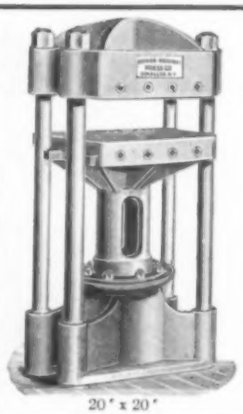

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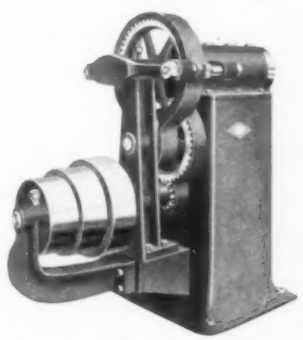

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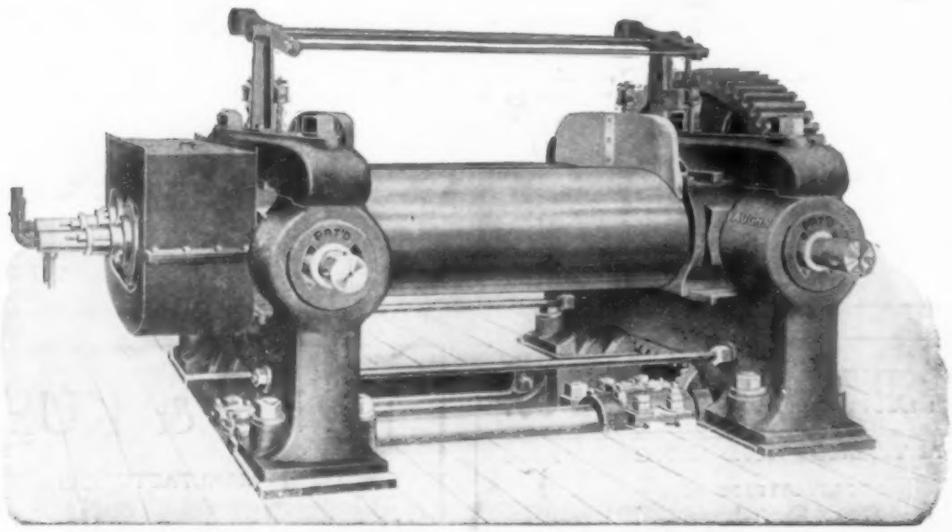

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